THE FARMERS' REGISTER.

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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

UNION OF THE CAROLINA PLANTER WITH THE FARMERS' REGISTER.

By an arrangement, just completed, between the proprietors of the Farmers' Register and the Carolina Planter, the two publications will be united from this time forward, and the subscribers of the Carolina Planter will be supplied, instead, with the Farmers' Register, issued, however, in weekly form of publication. This change of the times of issue has been adopted upon the advice of judicious friends of the work in South Carolina, and also because, agreeing in this respect with the Carolina Planter, it was supposed it would be more acceptable to its readers and patrons. The monthly form of the Farmers' Register will continue unchanged, as heretofore. The subscription price and conditions for both the monthly and the weekly publications will be the same, (as stated at full in the Conditions of publication of the Farmers' Register,) and any subscriber who is supplied with either of the forms, and should prefer the other, may have the change made at the end of any month, by sending a post-paid order to that effect.

To each of all the original subscribers to the Farmers' Register, to whom we are now indebted for their generous support for all of nine volumes, (and of whom nearly 400 names still are left on our list,) we shall send an extra copy in this new form, as some evidence of their kind and sustained and sustaining favor. This of course will not apply to those among them who have before chosen to avail themselves of some equivalent privilege or premium, offered by the conditions. We hope that it will be acceptable to these, our oldest and best friends, to receive thus gratuitously the weekly publication, for more frequent and therefore more inviting reading, while their regular monthly numbers will contain all the same agricultural matter, and somewhat more, for binding, to be placed in their libraries.

The agricultural matter of both publications will be the same. But some articles of the monthly form must necessarily be omitted in the weekly publication, and these will be such as are not strictly of an agricultural character. On the other hand, the weekly sheet will contain a summary of news, and also some advertisements, both of which will (as heretofore) be excluded from the monthly publication.

Each of these forms of publication has its earnest advocates, and opposite advantages; and to each there are also strong objections. In issuing both, we shall incur much additional trouble and expense; but, at this sacrifice, and by offering the choice to all subscribers, we trust that we may finally please all.

To furnish a summary of weekly news, in the manner which will be attempted in the weekly sheet, will cost more labor than to fill five times as much space with other and original matter. But without such labor, any such summary must be stale and worthless; and so long as we may offer such a dish as part of our bill of fare, it will be our care and pride to have it composed of the best ingredients, prepared in the best manner, and served up to our customers as fresh and new as a weekly supply will permit.—ED. F. R.

EXPERIMENTS WITH BONE MANURE.

To the Editor of the Farmers' Register.

Fairfax county, Va. December 10th, 1840.

On reading the article headed 'Extraneous Manures,' page 589, October number of the Farmers' Register, I am reminded of my promise to give you the result of my experiment with bone-dust, or more properly speaking, *crushed bones*, as a manure.

My first application of bone manure was on turnips, in 1838; the result, so far as relates to the first crop and the expense, is stated at page 152-3, vol. 7th of the Register. I have therefore only to add the results of two years' additional experience in the use and effect of bone manure in comparison with stable or other putrescent manures produced on a farm.

In order to ascertain, with as much precision as I could, the requisite quantity of bone per acre, as well as to be precise in its application and comparison with other manures, I laid off an acre of ground which I designed for turnips, and divided it into eighty-one equal parts by cross furrows at the proper distance. Upon two-thirds of the ground thus laid off, a *good* two-horse cart load of stable or farm yard manure was dropped in each square, which of course was manuring at the good rate of 81 loads per acre. To other parts of the ground, crushed bones, from the Roxbury Mass. mills, were applied at the rate of 15, 20, 25, 30, 40, 50, 60, 70, and 81 bushels to the acre, pure as they came to me, without adulteration or admixture of any kind. On the residue of the acre, a compost, consisting of the summer scrapings of the cow yard, without straw or litter of any kind, with only 8 per cent. of bone, was applied at the rate of 12 loads, of 25 bushels each, per acre. The ground had previously been *well* ploughed early in the spring, and a dressing of sixty bushels of good fresh lime had been applied on the furrow, immediately preceding the first harrowing. The farm-yard manure was regularly distributed on the ground and *lightly* ploughed in as fast as spread; having previously, as well as every other part of the ground, received a good dressing of plaster of Paris.

The bone manure and compost were harrowed in with a heavy two-horse harrow, and the ground so rested until the appearance of rain, the 8th of August, when, immediately preceding a shower, the seed were sown and *well harrowed* in. The rain which fell was not a soaking one, but a transient summer shower, much of which ran off, especially from that portion of the ground to which the bone manure had been applied; the part manured from the farm-yard, presented a rather more uneven surface, one consequently more favorable for the reception and retention of rain, which fact was well established by an examination of the ground the next morning, when I found that the moisture had penetrated at least two inches deeper in the one case than in the other, and which circumstance gave to that portion of the ground manured from the farm-yard a very decided advantage over the bone manure for the first two weeks, or until ample rain supplied sufficient moisture. The ground upon which this experiment was made is high and dry, and was, at the time, exceedingly poor stiff clay land, upon which I had in vain, two years in succession, tried to produce black-eyed peas.

The growth of turnips on such parts of the ground as had received not less than sixty bushels of crushed bone, was quite equal in the end to the best growth when the farm manure was used at the rate of 81 cart loads to the acre; whilst the growth on all smaller allowances of bone, was inferior, and most so where the least quantity was used. But on that portion of the ground which was dressed with the *bone compost*, as above stated, the growth throughout was decidedly superior to any other part, and the product, at maturity, was at least one third more than was produced on an equal quantity of the ground manured from the stables. The succeeding year, 1839, the entire acre was planted with sugar beets, and every part treated precisely alike, viz.: the seed drilled and covered by hand with a light compost from baskets; the crop, owing to an unfavorable season and neglect of *early weeding*, was nothing extraordinary, though decidedly best where the bone manure had been applied. The beet crop was followed, this year, (1840,) by Italian spring wheat. The growth of straw was most splendid, but like our winter sown wheat and rye, this season, was almost ruined by the rust; but in this, the third crop in two years from one manuring, the superiority of the bone manure was more apparent than ever, and as before, on that portion of the ground to which *the compost* was applied was greatly superior to every other part, and even on those parts of the ground where the *smaller* portions of bone had been applied, the straw was as heavy as it was on the ground which had received manure from the farm at the rate of 81 loads per acre. The wheat stubble was not grazed after harvest, and although the season was very dry, the volunteer red-clover and crab-grass, *following a spring crop*, was so rank as to make it exceedingly difficult to turn it under, with a first-rate two-horse plough, with the usual appendage of a heavy chain! Thus affording incontestable proof of the, as yet, undiminished effect of the bone manure under most severe cropping.

Of the compost above described, I applied, at the rate of 100 bushels per acre, to a poor piece of newly mowed meadow, (in 1838;) the succeeding crop was more than doubled by the application; the crop of the present year (1840) was still better than the last, and from the after-growth this year, I have little doubt of further and progressive improvement for several years to come; as the coarser particles of the bone are not yet entirely decomposed. A piece of wheat on which a like proportion of the *bone compost* was applied, and harrowed in with the seed, was greatly benefited by the application; and the clover which followed the wheat was 100 per cent. better than that on either side of the bone compost belt, which ran through the field, although the other parts of the field were similarly treated, excepting only the addition, of not more than at the rate of 24 bushels of bone manure to the acre. The conclusions, then, to which my mind is brought by the foregoing experiments are,

First, That when applied at the rate of from 50 to 80 bushels per acre, on the exhausted lands of Virginia, one bushel of crushed bone, is more than equal to one cart-load of 25 bushels of good farm-yard manure, in its effect upon the first crop. Secondly, That the effect of bone manure is more durable than that of any putrescent manure usually produced on a farm. Third, That when applied to land which is in *good heart*, the effect is much more powerful than it is on *very* poor land. Fourth, That when combined with manure and applied in the form of compost, the effect, both instant and remote, far exceeds any other application of the components when separated with which I am acquainted or ever witnessed. And lastly, if stable manure has to be *purchased* or even hauled *more than half a mile from your own stables*, bone manure at fifty cents per bushel, the price it cost me delivered on the farm, is the cheapest manure of the two. Yours, THOMAS AP C. JONES.

DESCRIPTION OF THE AFRICAN POTATO; READ BEFORE THE BARNWELL AGRICULTURAL SOCIETY.

From the Carolina Planter.

The *yam massicot*, or potato of St. Domingo, and supposed to be a native of Africa, is raised in the garden of Mr. John Michel, of Charleston, from cuttings of the fruit. It does not produce in the earth, but grows upon a vine which runs upon trees to the height of twenty or thirty feet. Each vine bears, more or less numerously, from twenty to thirty potatoes of the kind here shown. Many of them are twice or thrice the size of these, while others are smaller. The vine is rich and luxuriant; the fruit issues from the several joints, probably, for 10 inches apart. The leaf, which seems to grow also at the joints, is large and beautifully shaped like a heart. The plant readily grows in the open air, and, it is thought, would be particularly fruitful in a warm, sandy region, like Barnwell, if planted with a southern open exposure, against woods upon the north. The woods would serve for the vine to run upon, which, in the garden of Mr. Michel, is planted within a foot of the tree which supports its fruit. This potato is described as being superior in flavor to the Irish potato. It is not sweet. It is cooked in the same way with all other potatoes—may be boiled, baked or roasted, and when cooked is said to be of a bright gamboge color. S.

CULTIVATION OF THE VINE IN THE WEST.

From the Western Farmer.

I resolved to be present at the vintage this fall, at some of the many vineyards in our vicinity, and accordingly on Wednesday the 16th ult. rode with a small party to one owned by Mr. Longworth, but leased to Mr. Mortimer, who is his own *vigneron*. It is kept in fine order, every thing neat and business-like. There are about *seven acres* planted, only about two-thirds of which, however, is yet in bearing. The varieties found to suit best are the Catawba, Isabella, and black cape. The two first Mr. M. finds to be not such *regular* bearers as the last, but always a part crop, and about every third year a very full one. The cape rarely misses a fair crop, but the wine requires age, and when kept seven or eight years almost equals Catawba. The Isabella makes a good wine, and is best used the second year, when it is somewhat of a *sweet wine*. The Catawba is decidedly the best grape we have for wine-making, being on an average, very productive, the yield of juice unusually great, and the wine at three years old superior to any old Madeira I ever drank—wanting its fiery taste, and surpassing it in richness of flavor. Its *body* is such that I feel confident it could be transported to any distance without any necessity for the *reinforcement* which foreign wines receive previous to their being shipped.

This year the crop is scarce an average one. Previous to the late cold rains in June it promised well; but after that, many of the berries, to the extent I should think, of one half, dropped off. The young wood has ripened well, so that next spring's cuttings will be good. This is a matter of much importance—cuttings carlessly made, out of indifferently ripened wood, and left exposed to dry for any length of time after they are cut, as is two frequently the case with those who prepare them for sale, never can do well, nor make healthy, thrifty vines, even if they do grow.

T. A.

A CURIOUS FACT.

From the Southern Cultivator.

A fact was mentioned to us, which was certainly unknown, not only to ourselves, but to all the planters of *this* section of the state, with whom we have conversed on the subject. It is, that the *first* suckers from corn, if left undisturbed, will always produce ears on the stalks, similar to the parent stalk, and not an abortion on the ends, as we so often see in our fields; and in confirmation of this, we were shown four dried stalks, which had grown in such close proximity, as to have all the appearance of being the parent stalk and suckers. It was out of the ground, and divested of soil, but the mass of roots was so thick that we could not ascertain positively, without separating and thus destroying the specimen, (which we were not willing to do,) whether they proceeded from one or more roots—the appearance decidedly was, that the whole sprang from one. We counted on each of these stalks two *large* ears, with no greater difference between them than might be found between adjoining stalks. Col. Williams first mentioned the fact to us, and in conversing on the subject before one of his overseers, (who had, by-the-by, been with him a number of years,) the latter observed that he thought every person knew it. The abortions we have on our suckers are attributed to their not being the original or first, but such as had been thrown up a second time by the plant, which is said not to produce ears at the sides, but merely a few scattering grains on the tops of the stalks. We have mentioned these facts to many of our planters in this section of country. None have made observations sufficiently accurate, to speak positively on the subject, though the general opinion is, that such is not the case in the lower country. *Is it not one of the pecularities of the corn cultivated by Col. Williams?*

NATURAL HISTORY OF THE TOCKAWHOUGHE.*

To the Editor of the Farmers' Register.

Smithfield, Nov. 24th, 1840.

The tockawhoughe is mentioned by Capt. Smith, in his History of Virginia, as one of the indigenous productions, forming an important article of diet among the aborigines. This plant is still found throughout eastern Virginia, but from its comparatively rare occurrence, its singular habitude, and from its belonging to a class of plants rarely studied except by the professed botanist, it is generally a *lusus naturæ* to those who accidentally disinter it. A few remarks upon its natural history may therefore not be unacceptable to the readers of the Register.

The tockawhoughe is one of the fungi, or mushroom family, belonging to the genus† *tuber*. Two species of this genus, the *T. cibarium* and *T. albidum* are well known in Europe, as the black and white truffle, and are highly prized as rare delicacies by gourmands. In this country and in England, they are small, but in Italy they attain a diameter of several inches, and weigh from 8 to 14 pounds, [ounces?] The tockawhoughe like all the other species of this genus, is entirely subterranean, and totally destitute of roots, stem, leaves, or other appendage to connect it with, or to absorb nourishment from the atmosphere, or earth, and is apparently as isolated in, and unconnected with its mother soil, as a rock or pebble. From the absence of all surface indications of their existence, in Italy, where one species of this singular genus is much sought after, the diggers are accustomed to train dogs to hunt them by their scent, and to indicate their presence by scratching the ground immediately over them. The tockawhoughe is generally of an elliptical form, varying in diameter from one to four inches.‡ Like all of the fungiferous plants,

* Usually, but erroneously called Tuckahoe. Tuckahoe, is a corruption of the Indian word, 'Tucáhowe,' which literally means, "the place where deer are shy," and was originally used to designate a locality.

† Owing to the difficulty of obtaining specimens *fresh*, I have not been able to determine the species satisfactorily, but think it will prove to be the *albidum*.

‡ We have frequently seen larger specimens, and, if remembering correctly, in some cases as large as a man's head.—Ed. F. R.

it prefers a moist, shady, situation.* It consists almost wholly of *fungin*, a white substance, discovered by Braconnot, and found by him to be common to the mushroom family. Fungin in appearance resembles the fecula of the Irish potato, and in its composition is analogous to animal matter, but in its nature combines the properties both of animal and vegetable substances. In its natural condition it is indigestible, but by cooking it is rendered quite digestible and highly nutritious. C. B. HAYDEN.

PROFIT OF PEAS AMONGST CORN.

From the Agriculturist.

Col. J. W. Clay contends that his pea crop is worth more this year, than the corn on the same land, and he informs us that his corn crop was heavy. From our little experience in this matter and what we have gleaned from others, we are satisfied that peas can be advantageously raised in every corn field.

THE CURCULIO AND FRUIT WORMS.

From the Cultivator.

Messrs. Editors—In the September number of the 'Cultivator,' (page 136,) you say in answer to a correspondent, that "the worm in the *apple* as well as in the plum and cherry, is a species of *curculio*." Also, that "the worm with the fruit, falls upon the ground, *in which the worm takes up its abode in the chrysalis state, until revivified and changed by the spring, it issues a perfect insect.*"

I am well convinced there is a mistake here, in two particulars: 1st, as to the worm in *apples* being a *curculio;* 2d, as to the curculio *continuing in the ground till spring.*

In 1831, seeing it stated in all the books that the curculio, in its chrysalis state, remained in the ground during winter, I undertook to verify the fact by actual experiment. The result was communicated to the 'New-York Farmer,' (vol. iv. p. 178-9.) But as many of your readers have probably not seen that book, you may do a service by publishing an extract from it.

"I put some moist earth into a tumbler, about the first of June, and placed about twenty small peaches containing worms, upon the earth, and covered the tumbler with a piece of glass. June 30th, the worms had all left the peaches and had all crawled into the earth below. July the 7th, the worms had divested themselves of their skin, without having formed a shell or cocoon, and were nearly changed to bugs. At this time they were white, and showed upon the breast the soft rudiments of the proboscis, legs, and wings. These parts had not attained their full size, and appeared immovable. One insect, however, had completed his metamorphosis and was a perfect bug, of a mahogany color. All have since left the earth of their own accord having finished their change, and are now [July 19th] creeping about the tumbler and feeding on a plum leaf. On the 10th of July I opened the ground under a peach tree and found the insects in great numbers, from two to four inches beneath the surface, in all stages of their metamorphosis. July 19th, I found *one* in the earth under an apple tree, but could find *none* under peach trees. It appears then that *this insect retreats into the earth about the first of June, where it divests itself of its skin, and changes into a bug before the 19th of July, by which time it leaves the earth.* What becomes of the bug from July to May following, remains to be discovered."

"The curculio is not the only insect that produces the worm in our fruits. I stated above that about twenty peaches were placed in the tumbler. In the earth under them were six small, oval cocoons, thick, strong, and smoothly spun, which contain worms that manifest no approach toward a change. The same cocoons are also found under peach trees; The worms in these envelopes are different from those of the curculio; they are smaller, they are white throughout, while the larvæ of the curculio have orange colored heads. There is reason for the belief that the larvæ of the curculio, all or most of them, leave the various fruits in which they are deposited as early as the beginning of July, and that the worms found in fruits after that time, have a different parent. Some years ago, I preserved a worm from a Vergalieu pear, which produced a *gray miller.* Last November a worm from a Newtown pippin placed itself in a cavity on a board, covered itself with a web, and remained till April, when it produced a *gray miller* like that produced from the pear."

I continued my observations during that summer, and sent another communication to the 'New-York Farmer' (vol. iv. p. 248,) from which the following is an extract: "I have said there is reason for the belief that the larvæ of the curculio, all or most of them, leave the various fruits in which they are deposited as early as the beginning of July, and that the worms found in fruits after that time have a different parent. One reason for this belief is, that after that time very little fruit is left in which their eggs can be deposited, and what little is left is, for the most part, untouched by the curculio. Let me present a hasty estimate of cherries, apricots, plums, and peaches, in my orchard; on the first of May last, there were probably 200,000. On the first of July, the number remaining on the trees did not, I am confident, exceed 500, perhaps 20, before the middle of August contained a curculio; the rest continued fair. I think it would puzzle Dr. Tilton to say where that vast multitude of curculios that deposited 199,500 eggs before the first of July, have deposited them since that time, if they 'continue their ravages,' and equally puzzling it must be to devise a reason why any fruit has escaped—why only 20 eggs should be deposited and 480 peaches left undisturbed, if this vast swarm of insects has continued its operations ever since the first of July. It may be said that they resort to apples and pears. But before the first of July the greater part of the *apples* had also disappeared from the trees; most of those remaining have continued since untouched by the curculio. *The worms found in them are not the larvæ of that insect.* I have not succeeded in finding a curculio in a pear, at any time. The

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* Our word *poçosin*, is an alteration of the Indian, word, "pduckassin," the radical meaning of which is the "place of balls." May not this word, in its original application to low wet lands, have had reference to them as the habiátio of the Tockawhoughe?

only worms that I have found in pears, [and I have taken pains to collect a considerable number this summer,] are the larvæ [I believe] of the *gray miller* mentioned in my former communication. They resemble the larvæ of the curculio in having orange colored heads, but differ from them by being larger, and having a slight tinge of scarlet or brick color upon portions of the body. Instead of popping into the ground, they crawl under the rough bark of the trees, inclose themselves in a web, and are transformed into a chestnut colored chrysalis. Placed in a tumbler with moist earth, they form a web upon the cover of the tumbler, and there undergo their change. As none have yet left the chrysalis state, I suppose [as was the case with those which I have before preserved] that they do not complete their metamorphosis till spring. All the worms found by me in *apples*, since the first of July, *have been similar to those in the pear.*"

An excellent observer, David Thomas of Cayuga, maintained the prevailing opinion in regard to the worms in our fruits, and with a view to show that I was incorrect, he took "a worm with an orange colored head, from a bell pear, and put it in a tumbler, with moist earth," on the fifth of August. On the eighth of August he took from *apples* "three more worms with orange colored heads, and which appear to be the full grown larvæ of the curculio—another similar, but only half as long—and two others resembling the former with brown heads, but 100 [10?] times less in bulk than the first kind. Viewing these last under the microscope, I am satisfied that they also are larvæ of the common curculio, thus far confirming Dr. Tilton's remark, that this insect 'continues its ravages from May until autumn.'"—*New-York Farmer, vol.* iv. *p.* 205.

In a subsequent communication, in October, with his accustomed candor, he says, "N. Darling may be interested to learn that the worms which I confined, 'with orange colored heads,' left the moist earth, and encased themselves in a web under the cover of the tumbler. Soon after one of them came forth a *dark gray miller;* and *I conclude there was no curculio amongst them.* We are therefore indebted to him for the interesting discovery that the larvæ of *several* insects feed on our fruits; and it is now rendered at least probable that Dr. Tilton ascribed too much of this mischief to the curculio."—*N. Y. Farmer, vol.* iv. *p.* 281.

With these facts before us I think we may safely conclude that the *worm in apples is a larvæ of a gray miller,* and *not of the curculio, which is a bug.* Also that the curculio *leaves the ground in a short time after entering it.* Its *winter retreat* has not, within my knowledge, yet been discovered.

If your correspondent will look under the rough bark of his apple trees in October, he will find a great many of the worms from his fruit, *which have shut themselves in with a web,* and *are transformed into a chestnut colored chrysalis.* If he will carefully preserve them, he will find them coming out a *gray miller.* By simply scratching off, or rather picking off the rough bark [the scales or flakes, I mean] a vast multitude of these insects may be destroyed—not all, however, for they resort to other places of concealment, such as crevices in boards, posts and rails. Yours, very respectfully, N. DARLING.

New-Haven, Conn., September 19, 1840.

REPORT OF MAJOR GWYNN ON THE DRAINING OF THE SWAMP LANDS.

To the president and directors of the literary fund of North Carolina:

Gentlemen:—I have the honor to report to you the result of the operations since the drainage of the swamp lands was committed to my charge.

The feasibility of the undertaking has been so fully and clearly established, by former statements to the board, (particularly by the report of Mr. Shaw,) as to render any comment from me unnecessary on the present occasion. I shall therefore proceed to the subject immediately before me.

The only tract of land, owned by the state north of Pamlico Sound, sufficiently elevated to afford a fall for its drainings, is situated on the *high grounds* which divide the waters that flow into the Albemarle from those that run into Palmico Sound, lying between the angles formed by the meeting of the boundary lines of Washington, Hyde and Tyrell counties, near lake Pungo, which it embraces: it extends to the west shore of Alligator lake and five miles to the south of lake Pungo; on the north it includes a portion of lake Phelps, and contains, exclusive of the area of the lakes, 64,500 acres. A reference to the map herewith submitted will give a more perfect idea of its location, and exhibit, both in plan and profile, the main and lateral canals by which it is proposed to drain it. This tract is a portion of a swamp containing about a hundred thousand acres, an idea of the formation of which may be had by conceiving it to form, what in reality it does, a large basin, filled with decomposed, putrescent vegetable matter, saturated with water, confined and prevented from running off by an impervious subsoil and an embankment, or elevated strata of clay and sand extending nearly all around it, not sufficiently dry for tillage at the extremities and higher parts at any season of the year. When over-saturated, as is the case in the winter and spring and sometimes in the summer, the surplus water flows into Alligater and Pungo Lakes, and into Lake Phelps from the south—towards Alligator the descent of the surface from the south is three feet and a half from the verge of the swamp or basin. The redundant water, after filling the lakes to overflowing, is discharged into Alligator, Pungo and Scuppernong rivers over the surface and by percolation. In dry weather, the loose, spongy soil of the surrounding swamps draws the waters again from the lakes; and so great is this attraction upwards as well as horizontal, that the very surface of the swamps is kept wet during the greatest drought and hottest summer sun—thus through the medium of this filaceous soil, the lakes and swamps reciprocally supply each other with water as there may be a preponderance in either; or, to render the description still more plain, this swamp (and so nearly all of the swamps in the state) may come under the denomination of *land-locked bogs* or *morasses*, such as "are neither produced by water rising in themselves, nor by that of springs in the adjoining banks, but become wet by an accumulation of rain water stagnating on an impervious subsoil through which it can have no descent, and being surrounded by higher ground through which there is no vent or natural discharge for the water."

The plan of drainage is, therefore, obvious, and

consists in cutting through the *high grounds* or elevated strata that surround the swamps and pen up the lake waters, drains, of sufficient capacity to draw off the surplus rain water which in this great basin, or laboratory of nature, has contributed, and, indeed, from its agency, in a state of stagnation, in nourishing, we may say generating, those aqueous plants and trees from the decomposition of which the earthy matter of the swamps is entirely composed, may be said to be the cause of their formation. In accordance therefore with this plan, two canals, denominated *main drains*, have been laid out, one leading from Pungo lake to Pungo river, the other leading from Alligator lake to Rutman's creek, a tributary to Pungo river. The former, which we will call Pungo canal, is six miles, seven hundred and seventy-four yards in length, with an average width, at bottom, of twenty-two feet, an average depth of six feet, and a fall in the bottom of twelve and a fourth feet. The latter, the Alligator canal, is five miles, fourteen hundred and fifty six yards long, an average width, at bottom, of thirty feet, an average depth of seven feet, and a total fall of ten feet. These canals will reduce the waters of each lake four feet, and are of sufficient capacity and fall to draw off all the water that may be thrown into them by the lateral canals traced on the map as necessary for the farther facility of draining; the immediate effects of these canals will be to render a belt of land adjacent to them as well as the land around the lakes, susceptible of thorough drainage and cultivation.

At the time I took charge of the work, in April, 1839, the season for hiring hands by the year had passed, and the competition for laborers, by the month, from the Wilmington and Raleigh and the Gaston and Raleigh Rail Roads then in rapid progress, rendered it impossible to procure a sufficient force to prosecute the work with the energy that was desired. The two main canals were, nevertheless, put under contract and commenced; but owing to these causes, not much progress was made during the past year. At Christmas, the season for procuring laborers, the contractors were enabled to obtain a large force, and the work has since progressed steadily and rapidly, uninterrupted even by sickness of any kind. Nearly one half of the Alligator canal has been completed. The tributaries have been commenced, and on the 20th of October the water of Pungo lake was let into Pungo canal. All the effects which were anticipated of drainage on its borders and reduction of the lake water, have been realised; enough has already been accomplished to inspire confidence and to remove all doubts and apprehensions (if any exist) as to the success of the work. There are now ready for sale 8000 acres of land bordering on Pungo lake, on the west and north west. This tract is covered with a heavy growth of cypress and maple, and has been pronounced, by competent judges, unequalled by any lands in the state; and such also is my opinion, after having contrasted it with the rich lands of Pasquotank and Perquimons, and with those of lake Phelps and Mattamuskeet. In addition to this, there are 7000 acres of prairie land (the growth formerly cypress, now cane and bamboos, bordering on the canal, and on the northeast side of the lake, that may also be offered for sale. In confirmation of the productiveness of these lands, of which no one acquainted with them entertains a doubt, I would observe that similar lands in the neighborhood, but of inferior quality, subjected to the most ruinous system of cultivation for more than sixty years in succession, are still productive, yielding when the seasons are favorable to the imperfect plan of drainage, (which with but few exceptions prevails every where) from six to eight barrels of corn per acre.

I would respectfully recommend some immediate action towards bringing these lands into market; the first step, that of laying them off into sections, is one of much labor, and can be most easily performed at this season.

During the ensuing year Alligator canal will be completed, and also some of the tributary canals, and before the expiration of two years, we expect to complete the entire system of drainage in reference to this extensive tract of land. My estimate for the accomplishment of this object will consume the whole amount ($200,000,) appropriated for this purpose, and unless some further appropriation is made, the only fund applicable to an extended system of drainage will be the proceeds of the sales of the lands—which, if for cash, would be ample (together with the amount of sales accruing from time to time on account of other lands prepared for market) to drain all the swamp lands which the state owns. This will more readily appear from the following estimate, based upon prices considerably lower than those affixed to the lands by some of the most competent and experienced judges who have examined them. Under this view, preferable to exciting expectations that would not be fully realized, I will assume the low price of $6 per acre, and the number of acres which the present appropriation of $200,000 will drain to be 60,000 and even at this low estimate, we have a sum exceeding the cost of drainage by $160,000. Applying this ratio between the cost of draining and the income arising therefrom to the million of acres owned by the state, the sum although enormous would fall short of the realization.

This result, so beneficial and cheering, in itself calculated to inspire confidence and recommend a steady and vigorous prosecution of the work to the end, is only one among the many beneficial effects which will grow out of its completion. Some of the effects to which I allude, and confidently calculate upon, have been caused by precisely similar operations in Great Britain, and are so applicable, although referring to land in a partial state of tillage, that I beg, in lieu of my own words, to substitute those of the engineer appointed by the British parliament to report upon the mosses and marshes of that country. He says the climate is rendered more healthy and genial to both animal and vegetable life, by the removal of stagnant water, and the prevention of those noxious exhalations arising from large tracts of moss and marshy ground, where the herbage gives but little nourishment and only promotes disease. Since the introduction of drainage into this country, the health of the inhabitants has been greatly improved; agues and other distempers being now comparatively unknown that were formerly so frequent, occasioned by the humidity of the soil, and consequent impurity of the atmosphere, producing that miasma which so often proves fatal. The produce of the harvest, for-

merly precarious on such land, becomes, by drainage, ample and productive in quantity, and the quality of the grain is improved also. If land that is in tillage remains wet, every manure that is applied to it loses its effect to a certain extent, and fails to produce that abundant crop which a less quantity would yield, if such land were laid dry.

In wet land, seasons of tillage are lost, the labor is greater and the return less. The produce is always scanty and inferior in quality; but when land is properly drained, every exertion of good husbandry is attended with success, and the farmer thrives where his predecessor was ruined. By drainage alone, it is wonderful to see the verdure that soon takes place; a bog of the worst kind after being thoroughly laid dry (without any other melioration whatever) will spontaneously produce so many new and fine grasses, the seeds and roots of which hitherto laid dormant, owing to the superfluous moisture, but now spring forth and afterwards continue to flourish and increase. The rushes that formerly occupied the whole surface, soon decline, and better grasses rise in abundance.

In addition to these many beneficial effects, the advantage of draining the swamp lands that lay scattered over the whole of the eastern portion of the state, from the Roanoke river to the Wackamaw, and from the falls of the rivers to the seaboard, are of great importance in other respects.

No scheme has been or can be devised, that will so effectually stay the tide of emigration which flows like a mighty torrent from this portion of the state. The poor man who gains a scanty subsistence by the "roundshave and broadaxe," who hovers around the home of his nativity, until he exhausts the last pine tree, and is finally driven off penniless to the far west to seek a home among strangers, will here find an asylum; all his dreams of wealth and plenty can be realized in his own beloved state. A few acres of the land which from his childhood he has looked upon as a wilderness, a fit abode only for ferocious wild beasts and disgusting reptiles, now invite his labor and will reward his industry.

The health and the morals of the people will be improved, the coffers of the state filled, the community will be benefited by a greater supply of useful commodities—in short, the benefits that will result from a general and complete system of drainage, to the agricultural and general improvement of the state, are so many that the few instances (if any there be) in which they are neither seen nor acknowledged, can only proceed from prejudice.

I herewith present a map of the state lands in Carteret county, which exceed in quantity and are equal in quality to the tract we are operating upon, and can be drained at a less price than perhaps any other lands of the same extent in the state.

The tract lying between Core Sound and Neuse River at their junction contains 65,000 acres; its elevation is 12 feet above Long and Nelson Bays, and other small streams, into which it can be readily drained. This tract is mostly an open prairie; the soil a deep vegetable mould. There are two other tracts which were surveyed; one containing 12,000 acres, situated in the Newport Pocoson, between Newport River and the Clubfoot and Harlow Canal. The other 16,000 acres in extent, lays north of Lake Ellis, at the head waters of Hunter's Creek and Newport River. Both of these tracts are also of superior quality, and are susceptible of being drained at an expense that would amply repay the state.

But the improvement that offers more immediate benefits and direct returns than any other is the drainage of Lake Mattamuskeet; and if the state's title to the flats can be established, it should, in my opinion, after the completion of the work in which we are engaged, be the first to command the attention of the Board.

I am gentlemen, very respectfully, your obedient servant.

WALTER GWYNN, *Civil Engineer.*

Raleigh, 16th Nov. 1840.

AN IMPROVEMENT IN FATTENING HOGS.

From the Southern Cabinet.

Maury County, (Tenn.,) March 23.

Mr. Clayton:—It is manifest to every person that there is a great lack of economy in the wasteful manner we commonly feed our stock in Tennessee. I am satisfied that no one is more guilty in this respect than I am myself. I believe, with a little trouble and trifling expense, we might save full one half the provisions we feed to our stock every winter. In these hard times that would help very much to get us out of our embarrassments.

So fully was I convinced of this that I determined the past winter to try to make an improvement in feeding my fattening hogs. My practice heretofore was like my neighbors' generally, and I believe almost every person in Tennessee fattens his hogs in the same way. I usually put my hogs up in a small lot with water in it, and throw them as much raw corn in the ear as they will eat. This with a little salt now and then, is all they get, and in the course of six weeks or two months they are regarded as in good pork order, and ready for the knife. The last fall my hogs were put up in the usual way in September. The number I do not now recollect. But I observed particularly the amount of corn they consumed each day. They were fed by throwing the corn to them raw in the ear. The corn was carried in a large cotton basket, which I supposed would hold about two bushels. This nine times full was given them every day. It was about as much as they would eat. I had previously engaged Col. D. Looney to have some large kettles cast at his furnace in Wayne, of the size and dimensions that would accomplish the objects I had in view. My design was to boil all the corn I gave my hogs, and by having the kettle of suitable dimensions, to use it to scald them in when killed instead of a trough or hogshead. The kettles were not ready until I had fed my hogs some time. I at length got one, set it in a very simple furnace, which did not take thirty minutes to construct; and from that time until my hogs were killed they were fed three times a day on corn well boiled. The corn was taken to the kettle in the same basket and put in it until it was full, the kettle then filled with water and a fire kindled under it. This was sufficient. If at night, it would be well cooked by morning; and if in the morning, it would be ready by the middle of the

day. One not accustomed to it would be surprised to see how little fuel was necessary. A billet not larger than a common fence rail was entirely sufficient to cook one mess. When the kettle was emptied it was immediately filled as before, and a small armful of any wood was sufficient to cook it suitably by the next feeding time. In this way it required but six baskets full in the day. Before I got the kettle it required nine. Here was a clear saving of thirty-three and a third per cent. If one should have a lot of hogs that would ordinarily consume in fattening one hundred and fifty barrels when fed raw, he would save by the process of boiling, fifty barrels, which would twice over pay the price of the kettle. Mine, I believe, cost twenty-five dollars. Had I got it when I first put up my hogs, I am certain I would have saved fifty barrels of corn.

At killing time the kettle was of great convenience. Its oblong form makes it very suitable to scald in. Formerly the preparation for killing was a great trouble. We would make a large heap and put on it many rocks, and after it had burnt so as to heat them they were put in a hogshead of water to heat it—and after they were removed the water was ready for scalding. All this took much time, and was a great trouble. Now with the kettle quite a small fire is sufficient, and when once heated it can be kept in a good scalding condition throughout the whole day; you have nothing to do but make the water boil, and then put in the hog, and in a few minutes it can be taken out, and you may put in another, and so on until you are done. There is no necessity for delay. Keep the fire constantly burning, and as fast as you can kill you can scald. This I found to be a great saving of time and trouble, and a sufficient reason of itself to justify the purchase of a kettle.

After my hogs were slaughtered the kettle still continued to be of great use. It is excellent to prepare food in for milk cows and any other stock that are fed on corn.

I have often heard it said that one fact is better than many theories. Here then is a fact. I have tried it, and saved precisely one-third of corn—more than enough the first winter to pay the cost. If any one should doubt it, I would advise him first to try it, and I am sure he will then believe.

WILL. E. KENNEDY.

CHRYSANTHEMUMS.

From the Western Farmer and Gardener.

Messrs Editor:—Through the medium of your paper, I would propose to address the votaries of Flora on behalf of a much neglected, though beautiful flower, the chrysanthemum. It may be disputed, and with propriety, that any plant more amply repays the care of its cultivator, even supposing that it possessed no other qualifications than the splendor, variety of color and duration of its flowers;—but when we reflect that the Chrysanthemum delights to reveal its gorgeous beauties, when all else of ornament to a garden is gone, its value is incalculably enhanced. The idea has often suggested itself to me, that Flora, not wishing to produce satiety, allows her family to rest during the latter months of the year; but not being able to dispense with all, she has produced a plant, to bloom at that dreary time, possessing all her most beautiful and brilliant colors of the empire; and forming it so hardy that there is no difficulty in keeping it, and at the same time of easy propagation. Yet this beautiful gift of the goddess, is almost universally neglected. One honorable exception I would make—Chandler of London. The intrinsic merit of the flower, has led him to become its most enthusiastic admirer, and at the same time, its most successful cultivator. To his exertions we are indebted for all the finest varieties in cultivation. His chrysanthemum house presents a more magnificent appearance during November and December, than it is possible to conceive—stand rising above stand, covered with thousands of blossoms of every shade and hue. Let me, then, claim for this lovely flower, that share of attention which its merits entitle it to, and assure your readers, that in its perfection, its place cannot be supplied by any other. A word as to its propagation—this may be done by dividing the roots, by cuttings in the spring or by layers in July. They may be grown in large pots, filled with rich earth, adding a portion of rotten dung to each—or the plants may be grown in beds until fall, when they should be taken up, with balls of earth, entire, and potted, watered and staked, when they may be placed in a warm room, pit, frame or green-house, until they have done flowering, when they may be again turned out.

Let me hope that these few remarks, may call attention to this splendid flower—those who give it that share it deserves, will be well repaid.

JAS. KENNEDY.

A SUCCESSFUL EXPERIMENT IN REARING SILK-WORMS.

To the Editor of the Farmers' Register.

Hyco, Matthews, Dec. 9th, 1840.

Although personally unknown to you, and not in the habit of writing for the public eye, I deem it the duty of every individual, however humble their efforts may be, to withhold nothing that can in the least benefit the community, or in the smallest degree add to its welfare and prosperity. You have repeatedly requested, in your valuable paper, all who had made any experiments in the silk culture, to make known the result through the pages of your journal. I have made a small experiment this year in raising worms, and having succeeded in producing very fine cocoons under every disadvantage. I wish to lay before you the result, to publish or not as you think proper; and I would likewise wish to make a few inquiries of you for my own benefit and the instruction of all others who have been similarly situated. My husband, like many others, raised a great many multicaulis trees, which he found unsaleable. Rather than grub them up, I requested that he would permit me to make a trial of raising silk, promising to take the trouble of the superintendence myself. My worms (the two-crop white) commenced hatching the 22d of April, about which time we had a few days of warm weather. The largest multicaulis leaves at that time were not larger than a fourpence. The worms of course hatch-

ed too soon, but it was too late when I got them to retard that process. For the first few days, or during the first age, I found food enough for my worms, by gathering every leaf almost as soon as it expanded. This however left them almost destitute as they grew larger, so that I was forced to resort to our native trees, which are more forward in their foliage. I have no means of ascertaining how many worms I had. The eggs were not weighed, but bought by the lump. I have a large garret room, in which I made my experiment, I suppose some 30 feet square. It had no fireplace in it, and a part of it is unplastered. I had no means of warming it. In the very cool season, which occurred the first of May, the dampness penetrated every part of the room, in that long wet season, and frequently the rain would drive in. The thermometer sometimes was as low as 50°, and on one or two occasions the worms seemed to be almost benumbed. In addition to this, their food became very scarce, every leaf was stripped so soon as it appeared on the multicaulis and all the wild mulberry trees in the neighborhood were reduced to the same condition. After my worms reached the third age, I divided them and put a part in a spare bed-room, which I had fed exclusively on the multicaulis. My object was to ascertain if there would be any difference in the silk. Those that I fed on the native tree were colored, with very few exceptions, (I mean the cocoons,) three shades of yellow, some straw color, some bright, some almost nankin color. They were fed on the white Italian, the red, and the common black mulberry, all of which we have in our woods; the latter they would never eat if they could help it. I have seen them devour the stems of the white mulberry in preference to a fresh leaf of black.* In the room where I fed exclusively on multicaulis there were only *three* yellow cocoons out of 6 bushels. In the garret room, I think there was one peck of white cocoons out of seven bushels; 13 bushels was the first crop I made. Those who saw them and were judges, said they were beautiful cocoons, a great many of them were as large as some of the mammoth white, which I saw afterwards in Mr. C. Carter's cocoonery near Richmond. I was compelled to feed on wet leaves, from the scarcity of food, and sometimes my worms actually suffered for want of them. None of my worms were diseased; and I do not believe, I had a dead worm among them, I was careful in keeping them clean, and had plenty of room and fresh air.

I raised a second crop of six bushels; out of all these 19 bushels I saved but one barrel of cocoons, owing to the moth cutting out in spite of all I could do. I followed the directions of Clarke, and the 'American Silk-Grower' in endeavoring to cure my cocoons in the sun. The weather proved rainy; and after the moths commenced coming out, nothing would stop them. They would come out while in the oven, and bake to death. I wish to know which is the most approved mode of killing the moths; for I find the sun entirely too uncertain, and after they reach a certain degree of maturity, nothing will have much effect, for I tried both baking and steaming. I intend, the next year, to repeat my experiments, and am convinced the business may be made profitable. I think it is an employment that suits our sex, and should my feeble endeavors be crowned with success, a silk factory or cocoonery for poor widows and children, established in my own county, where they are so numerous, would be an object of my highest ambition. These remarks are penned in great haste, if they can in any way be made useful, you can use your own pleasure as to their publication.

I think there is great injustice done the kind of worm called two-crop white. They are a very hardy, healthy worm, as I think my experiment will show. We can get two crops from them without the risk of retarding, and they produce beautiful silk. Please state in your paper the price of the eggs, and where the pea-nut variety can be procured. If you publish this, let the signature be

E. A. T.*

* The tree here (as usually) called the "black mulberry," is properly the *red* (*morus rubra*) of botanists. That which our correspondent speaks of as the "red," is probably a variety of the white mulberry (*morus alba*) which, though originally introduced from Italy, has become perfectly naturalized in Virginia, and exhibits numerous varieties of leaf and of fruit in the seedling progeny.—Ed.

PROGNOSTICATIONS OF COLD WEATHER FROM BIRDS.

From the Western Farmer and Gardener.

We think a few remarks, under this heading, in each number of the "Farmer," will not be uninteresting. It is a favorite study with us, and one on which we might be apt to dwell at too great length, did we not bear in mind the intention of our work. We shall try to follow up these intentions by only speaking of birds, as friends or enemies of the farmer and gardener—of their migrations, as a test of the climate of different sections of country—and of such insects and plants as are familiar to all. Our object is to induce a habit of observation in our readers, each of whom may be the means of recording matters that may be of importance. Even those confined by their occupations to large cities, have opportunities for studying the great book of nature, which ought not to be neglected.

An old farmer, remarked to me, some weeks ago, that the approaching winter would be a very severe one. He said that, for fifty years, he had observed that whenever the chaff of wheat and other small grain and the corn shucks were uncommonly abundant, thick and heavy, the follow-

* We are much pleased to be enabled to present to the public this interesting experiment; but would have been better pleased if the lady who wrote the communication had not withdrawn the permission to give her proper signature in full.

We have found the heat of the sun sufficient to kill the chrysalis in the cocoon; and as a single day of *full exposure* to hot sunshine is sufficient, it rarely happens that one such day does not offer, before it is time for the moths to come out. Whatever may be the mode used for killing the worm, it should be tried sufficiently early, or it will be but partially effectual.

For the prices of pea-nut, and other eggs, we refer our correspondent to the advertisement of T. S. Pleasants on several of the covers of late numbers of the Farmers' Register, and of G. B. Smith on the Journal of the Silk Society.—Ed.

ing winter was invariably a severe one. I thought that though a cause for this might be found in the luxuriant vegetation of last summer, there might yet be some truth in it—that nature, aware of the coming severity of the winter, might thus furnish the grain with an extra covering. At all events, the old gentleman's remarks set me to making additional observations. In confirmation of his opinion, I found that the snow-bird, (fringilla Hudsonia, of Wilson,) arrived uncommonly early this fall, and in great numbers. The redheaded woodpecker, which rarely leaves us altogether, except in the very depth of winter, has entirely disappeared. The blue bird is only to be seen in flocks, as if preparing to go farther south, while their sweet warble, in an ordinary winter may be heard every fine day. The gold-finch or thistle-bird, generally so abundant with us at all seasons, is only to be seen in small flocks, in and about the city. I have observed the nut hatch, sitta carobinensis, (this little insect-hunter and the downy woodpecker, are commonly, but most absurdly, called *sapsuckers*,) busily engaged hammering pieces of acorns, and beech nuts into crevices in the bark of trees, and after making them fast, carefully covering them over with moss, as if to secure a supply of provisions during the severity of the coming season. Even the crows, which generally winter with us in great numbers, seem, with an occasional exception, to have forsaken us. I am told that numerous flocks of quails have alighted in the city and still continue to do so—this has always been marked as a sign of the approach of severe weather. The mocking or Carolina wren, (certhia Caroliniana of Wil.) is always abundant with us. His lively, quaint and varied notes are to be heard, ringing through the woods, both summer and winter. I observed a large flock of small birds, finches, rise out of a garden yesterday, which were strangers to me. They sat so close and silent, until they at once rose and flew off, with a clear note like that of the gold-finch, that I could not determine what they were, and I am averse to killing the little beauties, unless when really needed. T. A.

LAYING DOWN OPEN LANDS IN GRASS—KENTUCKY ROTATION—STOCK FODDER, MANURING AND GRAZING—CURING CLOVER HAY.

From the Southern Cultivator.

(Near) Colbyville, Ky., Nov. 5th, 1840.

I shall now proceed to the laying down open lands in grass, and the length of time the grass is intended to occupy the ground will determine the kind of seed to be used. If it is intended for permanent pasture, blue grass should perdominate. There should also be a considerable portion of timothy and clover seed. As soon as it is determined to put a field in grass, if in the fall the field should be sowed in wheat or rye, which should be ploughed in and afterwards harrowed, and, though not essential, it will be of service to have the land rolled. The next spring one bushel of clean timothy seed should be sowed upon every ten acres, one bushel of clover seed upon the same quantity of land, and half a bushel of blue grass seed upon each acre. This should be sowed in March or early in April and I have put calves and sheep upon the rye or wheat and kept them upon it until the grass began to sprout, when every thing was taken off and no stock allowed to go on it again until after harvest. By the time the clover is going out the blue grass will be ready to take its place. I found considerable advantage from harrowing and rolling in the spring—the harrowing before sowing the grass seeds and the rolling immediately after. The harrowing would appear as if it would injure the rye or wheat, but such has not been the result. If the ground is put into grass with the expectation of breaking it up in two or three years, then the blue grass should be omitted, as it would not get sufficiently strong before breaking up to be of much service.

As an auxiliary in setting fields in grass, it is of great service to pasture small stock, calves or colts, upon the rye or wheat fields during the winter, and feed them with hay that has been permitted to ripen its seed. Some of the best seeded fields I have ever seen has been effected by feeding stock upon them without adding any other seed than those contained in the hay. In those cases care was taken to distribute the feeding over the field. And the hay used had a mixture of seed in it.

The usual rotation in out crops is two years in grass, two in corn, and one in wheat, rye or oats. Under this kind of treatment our lands are increasing in fertility; especially where the small grain has been fed down by hogs. I have one field that has been alternately in small grain, (fed off by hogs,) and corn; this field has also increased in fertility.

Whilst the fields are in grass, all the stock fodder (a name with us of the corn-stalks after the corn has been husked out of the shock,) is fed to stock upon the grass fields; this with the dropping of the cattle serves to enrich the field. As a general rule the stock should be fed upon grass lands that will some day be ploughed. In this way the manure in made and dropped where it will be wanted to nourish the succeeding crops.

About the first of March, (two weeks earlier with you,) the stock is taken off the grass fields, and put into pens of three or four acres for each kind of stock, and are fed in those pens until the grass gets a good start in the spring. The secret of having good grass consists in giving it a good start in the spring.

Sometimes there are points of ground where the soil has been worn off or washed away. In such cases it is best to haul out a few loads of manure and spread on those barren places, which will make it produce grass readily.

Where the points are stony they should be broken up small with a sledge hammer, and if too abundant, a part of them removed. Grass will grow well where the surface is covered with limestone provided the stone be sufficiently small.

I prefer putting grass upon wheat or rye but it will do very well put in with oats. When put in with oats, the smaller kind of oats should be used, or less seed than usual of the larger kinds. When the larger kinds of oats are sowed thick, they entirely smother the grass.

When the grass is intended to be cut for hay, timothy should be sowed either alone or with the sapling clover. They both ripen together, while the common red clover is ready to cut two weeks

sooner than timothy, and on that account not suitable to be mixed with it for hay.

Clover alone makes excellent hay, and is easily cured. After it has been cut a half day, if the weather is good, it should be turned over, and in two or three hours it will be ready to put up in shocks. The shocks are made five or six feet in diameter and six or seven feet high. The hay should stay in the shocks twenty-four or forty-eight hours; after which it should be exposed to the sun two or three hours, and it is then ready to be put into the barn or in stacks. In each stack of two tons there should be put a bushel of salt, scattered in whilst stacking. If clover is stacked out exposed to the weather the stacks should be covered with straw or timothy hay. The principal objection to clover hay is, the time of cutting interfering with the corn crop. It should be cut when about half the bloom has turned brown. In curing clover it should be turned gently, and should, throughout, be treated with tenderness, as rough treatment will make it part with many of its leaves and blossoms.

SAMUEL D. MARTIN.

THE SUPPOSED TRANSMUTATION OF WHEAT TO CHEAT.

"Agricola in the Alexandria Gazette, ridicules the position taken by Benj. Hallowell, a distinguished *savant* of Alexandria in a recent address before the Alexandria Lyceum, that "wheat will degenerate into cheat." He pronounces the idea an absurdity, unsupported by proof, an exploded doctrine, unphilosophical and unscientific; and among other authorities in support of his opinion, quotes the opinion of the late celebrated Mr. Wickham of this city, who with more wit than seriousness, said he "would not believe it if he was to see it."

"A little experience is worth all the speculative theories in the world. There is not a *practical* farmer in Virginia, being at the same time an observing one, who does not *know* beyond all possibility of being mistaken, that "wheat does degenerate into cheat." Let the shattered wheat around your stacks in the field come up voluntarily, and mature, and many times, particularly in bad wheat years, the heads will be cheat not wheat. It is not always the case, depending apparently upon the character of the seasons. So of the volunteer wheat permitted to spring up in stubble fields—if ungrazed and suffered to come to maturity, it will be cheat as often as wheat. We suspect that this fact is true chiefly or only of bad wheat climates, like ours of middle Virginia; here it is true beyond all question, notwithstanding the writers on botany may have assigned wheat to one genus (*triticum hybernum*) and cheat to another (*bromus secalinus.*) It may be presumptuous, but we are rather disposed to believe those writers in error, than to distrust the evidence of the senses of all practical observers.

"Agricola admits that all our thousand varieties of apples, from the gloria mundi or the Hesperian fruit, to the lowest crab, have come from the uneatable wild crab. Is there not as good ground to assume that the wheat and cheat are varieties of the same genus? In other words, may not the botanists erroneously have classed them as distinct genera, or species of distinct genera?"—*Richmond Whig.*

The above article is the first reported excursion of the able editors of the Richmond Whig in the field of agricultural investigation and discussion; and we cannot congratulate them on the value of the honor and success acquired in the adventure. We should have passed by this article, and without comment, as we have done with almost every thing else on this subject for the last six years, (upon the ground that the subject had been sufficiently discussed before,) but for the broad assertion made by our brother editors above, that "there is not a practical farmer in Virginia, being at the same time an observant one, who does not *know*, beyond all possibility of being mistaken, that wheat does degenerate into cheat." Now, though declining again to argue here the question of transmutation, yet on this incidental issue, made upon *knowledge* and belief, we can assert, and prove also if necessary, that there are very many practical and observant farmers in Virginia, who not only do not "*know* that wheat does degenerate into cheat," but who fully believe the reverse; and who agree with the article in the Alexandria Gazette, that the idea is an absurdity, unsupported by proof, "and an unphilosophical and unscientific" though certainly not an "exploded doctrine." Though not deserving the reputation of being a good or judicious farmer, we may venture to claim the merit of having been a practical one, literally, and an observant one, for the more than twenty years of our practical agricultural labors; and that we not only still stand as an exception to the sweeping classification above of believers in transmutation, but have steadfastly maintained the contrary, and have proved it, as we conceive, so far as a negative proposition, where mistake is possible, is susceptible of proof. Long ago we (in conjunction with other farmers) subjected this question, in the most rigid manner that could be devised, to the test of actual and accurate experiment; the results of which were published in the first volume of this work, and which will be republished below. No exception has ever been taken by any person to the plan or the mode of conducting this experiment; nor do we conceive that it can be shown to be deceptious in any point, unless indeed by denial of the credibility of all the parties concerned, who signed the statement of facts and results.

In addition to the *testimony* afforded by this experiment, and all other facts and arguments which were formerly adduced in this journal, we offered (in this work) a reward of a full set of the Farmers' Register, to any person who would produce, and fully prove the pro-

duction of even so much as a single head of cheat from a grain of wheat. In the five or six years since this reward was offered, there has been no claim for it presented, (possibly because of the small value of the reward, or its want of notoriety,) and, moreover, though assertions of belief have been plenty, not one atom of *evidence* of transmutation has been brought forward, which ought to satisfy a scientific or legal tribunal. And we here repeat the offer of a reward, and increase it to the amount of $100, which we offer for the first clearly and positively proved fact of the production of cheat from seed of wheat sown for that purpose, and of which the progress from the seed to the product shall be indisputably traced, and proved to the satisfaction of an intelligent scientific umpire. This offer we request the editors of the Whig to make known through their widely circulating journal; and if a claim for the reward should be made, we will leave the decision to judges, to whom there can be no proper ground of objection. If it is so very easy to cause the transmutation of wheat to cheat, as is averred and believed by most persons, and by so many modes and agents that it can scarcely be avoided altogether in the common practice of every seed time, then, surely an experimenter, aiming to produce that common result, by using any and all the agents deemed as efficient causes, might certainly and easily produce the now disputed result, and so clearly as to place the question beyond all future dispute. Until this is done, we shall remain unbelievers in the doctrine of transmutation of wheat to cheat, as well as (what is as firmly believed by some other persons) of wheat to spelt, (or darnel,) or to cockle, or of oats and flax to cheat. What would be thought of any doctrine of physical science affirming that a certain product would follow the use of certain easily available means, and yet, by no possible designed direction of the means, could the product be obtained! Therefore, to those persons who know of so many facts of foregone transmutations of wheat to cheat—who know of so many causes and agents which will certainly produce such effects, we say—"Let us pass by all remote and former operations and grounds for either asserting or denying the doctrine. Go to work now, and exhibit new facts and new proofs—or even but a single fact amounting to proof, and the question will be settled as you claim." If it were a matter to be settled by the respectability and credibility of *believers*, there would be no question better settled already. But that is not the ground to decide questions of science upon. We want facts, and not reference to authority, no matter how respectable. There has been no formerly prevailing absurdity of opinion which the world has since shaken off, which in its day did not have the balance of authority of the most numerous and respectable believers in its favor. We do not question the sincerity of belief, the good faith, or the veracity of any one who asserts the doctrine of transmutation; but we distrust the strict accuracy of his reasoning, and the continuity of his chain of facts, from the first cause to the last effect. Therefore, without meaning the slightest disrespect to our brother editors of the Whig, or any other transmutationists, we must beg leave to say, in the words of Esop, "Do not tell us how far you jumped at Rhodes, but jump here, and let us see it."

To avoid frivolous as well as fraudulent claims for our offered reward, it is proper to impose some restrictions, and to establish some rule, by which an accurate mode of experimenting and truly reported results shall be secured. Therefore we require of any one who may design to claim the reward, and the honor of settling this long disputed question, that he shall give previous notice of his intended experiments, through the Farmers' Register, and that the plan of experiment, designed to be pursued, shall be also fully and particularly there and then set forth. The person shall, at the same time, name some one respectable, intelligent and distinguished farmer, and we will name another—and the two shall appoint a third person of competent ability to conduct the like experiment, and who shall endeavor to observe every condition and care required by the claimant, and which person shall decide upon the results without appeal. If, however, the conditions proposed for the experiment are manifestly insufficient, and such as could lead to no certain result, the chosen arbiter may object to them at first, and refuse to try, or decide by, an experiment so faulty as to lead to nothing but useless trouble. But by giving early notice, every proper and necessary condition can be adjusted, every objection removed, and the results made as certain as any can be in regard to vegetable reproduction. We invite the writer of the foregoing extract, (who is a farmer,) to achieve the labor he deems so light—and earn the reward and the honor of proving what he pronounces not only certain, but undisputed. In the mean time, we submit to his consideration the only experiment which we have yet known to be carried through for this object, and than which we cannot imagine one more favorable to the transmutation side, or a more strict test of the opposite opinion.

"*Experiment to test the possibility of wheat degenerating into cheat.* [*From vol. i., Farmer's Register, p.* 83.]

"*October* 20*th* 1832. A spot about twenty feet square on one side of a field of corn, was left out when all the adjacent ground was ploughed and

sown in wheat three days before. Soil, a silicious loam, (which had been marled in 1820,) on a retentive subsoil, which by preventing the sinking of the water from rains, keeps the surface very wet through winter and spring. The surface of this part of the field is a very gentle slope, declining towards the north, and the lowest spot of the whole (and therefore the most exposed to water) is where the space was marked for this experiment. There the surface becomes level. The whole field, including this spot, had been ploughed five or six inches deep last winter, for corn, and well cultivated, but not later than the beginning of July. All remained very clear of weeds.

"The space was slightly smoothed by the broad hoe, merely to level the clods, but not broken any where an inch deep, and generally not cut at all. As the corn had been tilled level, and not hilled, the surface required but little smoothing. Wheat was selected for the trial which had passed through a cockle sieve, and of course was all either shrivelled, or very small grains if plump. Lines were slightly traced along the edge of a straight rod, (not more than half an inch deep,) and a few seeds, varying from three to seven, were placed accurately at every six inches of the line, by notches on the rod made at those distances. The seed was carefully cleaned of every grain of cheat, spelt, and cockle. Half the square was thus planted in such rows six inches apart, and the remainder in similar rows twelve inches apart. For fear that even this very defective seed might not be bad enough to insure the change to cheat, one of the subscribers picked out a number of the most shrivelled and imperfect grains, all of which he is confident will bring cheat, if they are capable of producing any thing, which is very doubtful from their appearance. One of the rows was planted with these grains, four being carefully deposited at each distance of six inches. All the seeds were covered with about half an inch of mould taken by the hand from the intervals between the lines; and the whole space was then slightly beaten over with the flat of the broad hoe.

"About four feet width adjoining the square, and of similar unbroken corn land, was strewed broadcast with similar defective seed, covered as shallow as possible.

"The earth dry at this time, and in fine order for ploughing. The weather uncommonly warm for the last three days.

"Present and assisting at the making of this experiment, and undersigned, Thomas Cocke and Edmund Ruffin of Prince George county, and William J. Cocke of Sussex—the first a believer and the second an unbeliever in the change of wheat to cheat, and the third undecided. It was our design in this experiment to bring into operation every cause to which this change is usually ascribed by different persons, namely, 1. imperfect seed—2. thick sowing—3. a wet soil—4. hard or unbroken soil—5. grazing or mowing, which is to be done next spring.

"If any cheat or spelt, should grow in this square from any other seed, it cannot be mistaken for the product of the wheat we have planted, unless the plants should stand in one or more of the positions so accurately fixed by measured distances.

THOMAS COCKE.
EDMUND RUFFIN.
WILLIAM I. COCKE.

"*October* 20*th*, 1832.

"*April* 15*th*, 1833. The growth of plants on the square is very mean, (generally six or seven inches in height,) and but few are living compared to the number of grains sown. Every row however has some plants living. Half the marked row where the worst seed was used, and as much of the one adjoining was cut down this day within an inch of the ground, and the parts so treated were also marked.

"*June* 3*d*. We again carefully examined the experiment together, to know and report the final result. Not a single head of cheat or spelt is in the whole space. The cut plants have grown as tall, and are not perceptibly worse than the balance in the same rows. The row sown with the very imperfect grains, has a still more scanty growth than the others, but had twenty-four heads of wheat in its whole length; a few of these heads had not come out of the *boot* and perhaps will not produce grain—but they were opened and found to be wheat, like all the rest which were out.

"The adjacent parts of the field of wheat contain a few scattering stalks of cheat, and still fewer of spelt. The seed had been well cleaned, (though probably not perfectly,) by the hand-sieve.

THOMAS COCKE.
EDMUND RUFFIN.*

"*Prince George Co., June* 4, 1833."

RHUBARB PLANT.

From the Cultivator.

This excellent perennial, (called, in New England, the "Apple-pie Plant," from the fact that pies made of it, so much resemble those made from the Apple,) not only makes a very superior and grateful pie, but is said by medical men to make a very healthful one. A plan for its culture which we have seen adopted with very good success, is this:—In the spring, before the leaves put out, place your roots in a light soil, well manured. When the leaves are well grown, take common barrels, and after removing the heads, place them over the plants. As the leaves spread, the sides of the barrel will support them, and you will soon see them rising above the top. By adopting this plan, leaves will grow much faster, and are more delicate, making better pies and more of them. This plant may be forced in the winter season with but little trouble, and thus made to supply a family with excellent pies, not inferior to those made of the apple, all the year. In order to effect this, the roots should be taken from the garden in autumn, and placed in water-tight kegs, or large pots; some fine garden loam should then be put in, and water poured upon it, that it may settle well among and around the roots, which should be placed level with each other, a little below the surface of the earth. The whole should then be covered with other pots of the same size, to exclude the light, and well supplied with water. The heat of the kitchen, or, towards spring, of a tight warm cellar, will afford a sufficiently high temperature. Plants of one year old will answer to force in this manner. The *stock of the leaf* must be peeled, cut into small pieces, and prepared for pies in the same manner as apples.

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* Dr. William I. Cocke was absent, and therefore did not sign.—ED.

THE MAMMOTH CAVE.

From the Journal of Commerce.

This vast subterranean territory is situated in Edmonson county, Kentucky, in 37 degrees north latitude. The cave extends under the great range of knobs which border what have usually been called the Green River Barrens, and is near to Green river, and on its southerly side. The Barrens were formerly destitute of timber, but covered with high grass, which was every year destroyed by fire. Since this section of Kentucky has become thickly settled, the fires have been prevented, and now the land is becoming thickly covered with a growth of hickory, oak, and chestnut timber. The knobs are a range of hills which extend a great distance on the southerly side of Green river, and bound its waters on the south. This region of country is a limestone formation. Many of the streams of water run under ground for great distances.

The Mammoth Cave is of vast extent, and equal in size (reckoning all its branches and apartments) to the whole Island of New York. The main cave is, as far as explored, thirteen miles in length, with numerous branches making off in every direction. The entrance to the cave is through a passage in the rock at the bottom of a hill and at the foot of a knob; and is about six feet in width and ten feet in height for about thirty yards; after this it increases in height and width. During winter a strong current of air rushes into the cave—in summer the current changes, and blows equally strong out of the cave. The roof and sides are of solid limestone; the bottom is covered with earth to the depth of several feet, and beneath this earth is solid rock. The earth on the bottom of the cave is strongly impregnated with the nitrate of lime; and during the last war, and for several years previous, large quantities of saltpetre were manufactured at this cave. A large portion of carbonated alkali was required to be used in crystallizing the nitre, which increased the expense of the process to such an extent that it cannot now be made to compete with the saltpetre imported from the East Indies, which is now sold in our markets at a very low price. The supply of nitrate of lime in the Mammoth Cave is inexhaustible. The earth in the cave, after having been lixiviated, becomes re-impregnated with the nitrate again, equally strong as at first, in about three years. The process of making saltpetre was by leeching or lixiviating the earth in hoppers, in the same manner as ashes are leeched to make soap or potash; then evaporating the liquid to a certain consistency, and mixing it with carbonated alkali and allowing it to crystallize. Hoppers were constructed in the cave about one mile from its mouth, to which water was conveyed in wooden pipes from the outside, and the liquor obtained from the hoppers was conveyed to the mouth of the cave by the same means, where it was raised by pumps into the evaporating pans. About fifty men were employed during the war, in the Mammoth Cave, in collecting and lixiviating the earth, together with oxen to draw the earth to the hoppers. During the whole time these men were employed in the cave, there was not a case of sickness among them. The atmosphere of the cave is dry, and of uniform temperature throughout the year, viz. 60 degrees of Fahrenheit. Animal and vegetable substances placed in the cave would become dry, but never putrefy, or decompose. It is considered one of the most healthy places known; and the valetudinarian could resort to this cave for the recovery of health, with greater prospect of relief, than to any other climate whatever. On this point there can be no doubt; and medical or scientific men can philosophically account for this, from this fact, that the atmosphere is dry, and of uniform temperature throughout the year. The air of the cave is pure, respiration is easy, combustion goes on well, lights burn bright and clear. Animal and vegetable substances decompose and putrefy from the effects of heat and moisture combined. In the cave these are both absent. Besides this, the climate of this section of Kentucky is delightful; and immediately around the cave, the country is picturesque and beautiful, and a residence there for a valetudinarian would afford medicine to the mind as well as the body. The road in the cave for the first mile is as good as any of our country roads. Many persons may suppose this great subterranean apartment is gloomy—not so. It is of too vast extent. Its mighty walls and vast apartments afford a sublime spectacle, and impress the mind with wonder and admiration. This is the work of the great Architect of nature, and no person can traverse this vast subterranean territory, without feelings of veneration and awe. Here the sound of the mighty peals of the rolling thunder never reach. All is still—quiet and peaceful. Mr. Gorin, of Glasgow, Ky., wrote me in 1839 that he had erected a hotel at the mouth of the cave for the accommodation of visiters. He was at that time proprietor of the Mammoth Cave tract, consisting of about 1600 acres, which he improved as a grazing farm. Since then, I have been informed that the cave has been purchased by Dr. Croghan, of Louisville, and that he intends constructing a hotel *in* the cave. I presume that the spot he will select for building is the foot of the mountain, as it is called, about a mile from the mouth. Here the roof and walls are of great height, and the cave of great breadth. This cave is visited by vast numbers of persons—it is about eight miles distant from the great road leading from Lexington to Nashville, and is about an equal distance from Lexington, Louisville and Nashville, viz. about 100 miles. To persons entering the cave at the time it was worked for saltpetre, the first glimpse which the visiters caught of the group of blacks working by torch-light, at a distance ahead, and of their white shining teeth, was very imposing, and can be better imagined than described. Mr Miller, who resided at the cave a number of years and had charge of the saltpetre works, assured me that he had never seen any animal or reptile in the cave. I have been much at the cave, having resided there for weeks together, and my knowledge of it is derived from personal observation. Mr. Gorin, in his letter to me of last year, states that a large apartment had been recently discovered in a distant part of the cave, in the form of a semi-circle, about five hundred feet in height and the same in width, and that in another apartment they had discovered a stream of water of considerable extent; and added, that the whole extent of the cave, so far explored, was from 50 to 100 miles. The reader

may wonder why such a subterranean territory has not long ago been completely explored. The reason is, that visiters have their curiosity satisfied without accomplishing so great a labor. It would require a great length of time to examine or travel its whole extent. The cave has been once inhabited. The workmen, in digging up the earth for saltpetre, found the remains of cane torches in great abundance, and frequently old moccasins. In a room called the deserted chamber, which is an apartment elevated some feet above the main cave, are the imprints of human footsteps in the sand, not more than four inches in length. And near seven miles in the main cave from its mouth are the evidences of that part of the cave having been inhabited by great numbers of persons. About a mile and a half from the mouth of the cave a branch makes off to the right from the main cave;—this is what is called the haunted room, named from the echo which answers sound made in that apartment. In this room are a great abundance of stalactites, hanging from the roof like icicles from the eaves of a house. They are of every variety of shape which the imagination can picture. One of these stalactites is of very large size, and hollow; and when struck, sounds so loud that it can be heard a considerable distance. This is called the Bell. Another is in the shape of an armed chair.

This chair was called "Wilkins's Chair," named after the worthy Chas. Wilkins, of Lexington, brother of our former minister to Russia, who was at that time one of the proprietors of the cave. This arm chair is nearly as large as one of the columns of the Exchange, and about ten feet in height. It is solid and ponderous, and of that species of rock called fluor spar. It has been formed by the action of water from above the surface, penetrating the rock and carrying with it its minute particles, which, as the water separated, left the particles to adhere together, and by the action of the air to harden and become solid rock. Thus it is that many of the strata of our earth are formed. The decomposing of one body affords materials for the composing of another. Had this water, holding this mineral or earthy matter in solution, penetrated wood, it would have filled its pores, and changed it into stone, retaining its original form, and becoming what is usually called a petrifaction. This room, containing such abundance of stalactites, is about a half of a mile in length, and about twenty rods in width;—and my opinion is that the land on the earth's surface above this apartment is level, which allows the surface water to settle down through the rock. Where the land above is rolling, the rain water runs immediately off; hence the dryness of the rooms underneath the sideling knobs. The walls of this room, which are of solid limestone, are covered with a white incrustation, similar in appearance to the coating of the inside of a tea-kettle in which hard water has been boiled for a length of time;—and on some places the incrustation is chequered with black lines, adding to its beauty and appearance. At the side of this room the traveller descends a sand hill about sixty-feet, at the bottom of which is a passage on the left (about four feet in width, fifteen in height, and about fifty in length,) to another room or apartment running parallel with the last. This passage is a great curiosity—exhibiting columns of beautiful shape, on one side, and caves or indentations on the opposite side, of a corresponding shape and size. To the first view the rock appears to have been separated by some convulsion of nature. But such was not the case: the top of the passage is arched with the same solid rock, which would render it impossible that such a cause should have produced this effect. It is nature that has arranged these corresponding columns and curves according to the laws of affinity, attraction, crystallization, &c. &c. The room we are now in is called the "pond room," from the circumstance of there being on its surface a small pond or basin of water, of a few feet in circumference, and about three feet in depth. This water is of crystal clearness, the smallest object thrown into it may be distinctly seen on its bottom. Although this basin is three feet deep, it has the appearance of being not more than two inches in depth, and a gentleman who had the curiosity to attempt to jump across it, did not quite reach the opposite side, and found himself half his depth in water. Thus it seems that a man cannot always trust his own eyes, and although persons may sometimes be very positive in regard to matters and things, still, like this gentleman, who undertook to jump across the pond, may unfortunately find themselves positively mistaken. The water in this pond was what I term *pure water*—holding nothing at all in solution. Every earthy particle had been precipitated by time and temperature, and the stillness of the atmosphere favors such an operation. What may be the properties of the surface which surround this body of water to refract the rays of light from our lamps, so as to make the water appear of less depth than its true depth, I cannot determine.

Near to the basin of water in the pond room, is a pile of round stone, about the size of paving stone, quite black, and covered with an incrustation of a semi-vitrified substance, which renders the appearance much like a pile of cinders. Visiters have named this place "Vulcan's work-shop." In one part of this room, a body of water falls in a solid column, from a circular hole in the roof, about the size of the head of a barrel, and perfectly round, into a well in the bottom of the cave of about the same shape, but of larger size and of great depth.

The main cave, in those places where it is intercepted by other rooms or branches, is generally of great height and increased width. The traveller, in passing up the main cave, frequently meets with rooms and branches which are inaccessible, from the fact that entrance to them is several feet above his head, and can only be reached by means of a ladder. There are also vast numbers of apartments running in various directions underneath, and the sound of the footsteps denote where these apartments are. Great numbers of these branches and apartments have never been visited. The cave may truly be said to be a perfect wilderness to explore. About 11 miles from the mouth, the walls and roof of the main cave are very high, and covered with incrustations of the purest white and deepest black, checkered in every variety and interspersed with beautiful crystallizations of every size. Some of the incrustations have a shining frosted appearance, while others are without any such ornament, presenting a pleasing, beautiful, and harmonious contrast. When the

rays of light from the lamps strike these surfaces the walls and roof present the most brilliant, beautiful, grand and sublime appearance imaginable. The shining sides of millions of the beautiful crystals, reflecting, and re-reflecting the light, and their little points like distant stars in the firmament, twinkling and shining as if trying to outdo each other, present to the view of the astonished and enraptured beholder the rich beauties of the harmonies of nature in all their grandeur and magnificence. Here, in a vast hall, in one of nature's mighty subterranean mansions, eleven miles from the light of day, in soft and solemn silence, stands the astonished beholder wrapt in admiration,—in wonder, in astonishment. On every side, he beholds nature in all her magnificence, beauty, harmony and order; every movement of the lamps presents to his view new reflecting surfaces, that seem as if alive, welcoming and enjoying as with enraptured ecstacies the rare visit of the rays of terrestrial light. Where is the human being who could stand unmoved in such a place? Impossible! Admiration, contemplation, meditation, and adoration will fill his soul, and he will, as it were, involuntarily and spontaneously offer up to the adorable and almighty Creator of the heavens, the homage of adoration and the tribute of praise.

Here, every crystal has its own peculiar shape; nature knows no variation in the laws of crystallization; every variety preserves its own peculiar order and form. To the learned geologist, my description will not be deemed fanciful; he can easily picture to himself the effect of the rays of terrestrial, moving light, thrown upon the surface of crystallized walls, in a dark apartment of great height and extent. What a place this for contemplation and meditation;—the stillness, the silence of midnight, yes, and ten times more—the stillness of silence—yet surrounded by ten thousand times ten thousand living lights, changing with every breath that moves the hand which holds the lamp, the rays of the light of which are thus newly reflected. Here respiration is easy—the lamps burn bright—here man may enjoy life, even in a subterranean dwelling. Doct. Smith, of New Jersey, who visited this portion of the cave in 1811, thus speaks of its appearance. "Imagine to yourself a superb hall brilliantly illuminated with ten thousand times ten thousand lamps, with its superb walls irradiated with millions of the richest diamonds, and you will have but a faint idea of its lustre."

The walls of the cave are generally of an even surface. A description of the numerous rooms, apartments, and branches, would swell this article to a great length. I have traversed various portions of the cave a great number of times, and at every time found something new and interesting. Some apartments of the cave contain Glauber and Epsom salts in great abundance. These salts are in a crude state, and have been collected and used in that section of the country.

The examination of the cave has developed this fact, viz.: that the temperature is the same at five hundred feet, as it is at two thousand feet below the surface. The members of the Royal Academy of Sciences at Paris have been some years experimenting upon the heat of the interior of the earth, by boring into it to a great distance below its surface, and have expressed the opinion that the heat increases as they progress downwards. In this cave such is not the case, but on the contrary, the temperature is equal and uniform.

With respect to water, although the cave is in many places deep, still it is in nearly all its apartments perfectly dry, that is, in all apartments which are protected from surface water produced by rain. The temperature of the cave is so low that no moisture is produced by evaporation. As there are numerous apartments beneath the main cave, these of course would preserve the upper apartments dry, unless the heat of the earth increased in further progressing downwards, in which case evaporation would produce dampness in the upper apartments, as a necessary consequence. The quantity of water which falls upon the surface of the earth in that latitude averages about forty inches per annum.*

The atmosphere of the cave is another subject of great importance, being uniform throughout the year, and perfectly dry, or rather comparatively so,—and whatever moisture there may be, is attracted by the dry earth which covers its floor, by which it is absorbed and crystallized. Many of the readers of this article may not be aware that where two crops of sand are placed side and side, the one wet, and the other perfectly dry, the dry sand will attract moisture from the wet, until both become equal.

Meat left in the cave twelve hours will become so completely impregnated with nitre that it cannot be eaten—and meat that is slightly tainted, if placed in the cave will be divested of its putrefying properties, and gradually dry and become hard. I have no doubt that in process of time, this cave will be resorted to for the restoration of health. A person could, without any inconvenience, travel in the cave five or six hours every day for a sufficient length of time to allow the atmosphere to have a powerful effect upon the animal frame.

The circumstance that there has never at any time been a single case of sickness among the great number of persons who, for several years, wrought at this cave, is most conclusive on this point.

The Mammoth Cave has been, at some very remote period, inhabited. Mr. Miller, the former superintendent of the workmen at the cave, found, in the excavated earth in the cave, a human jaw bone of very large size, which would go entirely outside of the jaw bone of most living persons. This jaw bone was kept at the cave several years to show visiters, and is still, probably, somewhere in existence, as it was in a good state of preservation.

The cave is visited by several hundred persons annually and the showing of its rooms has now become a source of revenue, the superintendent requiring $1 from each visiter as compensation for furnishing a guide to show the cave. Formerly, in traversing the cave a great distance, it was requisite for the traveller to mark each corner which he passed, with the figure of an arrow, pointing outward. A full account of this cave would fill a volume. M.

LARGE HOGS.

From the Kentucky Farmer.

November 26, 1840.

Sold by Dr. S. D. Martin to H. Savary, merchant, at Colbyville, Clarke county, Ky., five hogs

of the Woburn breed, of the following weights. Seven and a half pounds deducted from each one for weight of the *breeching*.

No. 1	weighed	640 lbs.
No. 2	"	630 "
No. 3	"	660 "
No. 4	"	748 "
No. 5	"	824 "

The following gentlemen were present when the hogs were weighed.

Rev. Wm. Gunn, Edmund Taylor, and Henry Savary.

Two of the above hogs had been used as boars, and were three years old in March last. The other two were two years old in February and April last. SAM'L. D. MARTIN.

AMERICA AGAINST ENGLAND IN COTTON MANUFACTURING.

From the Journal of Commerce.

The Monthly Chronicle, published at Boston, contains an article prepared by Mr. Montgomery, an Englishman practically acquainted with the cotton manufactures of England and the United States. In connexion with the remarks of the editor of the Chronicle, who also is learned in such matters, the article presents a minute statement of the comparative expense of manufacturing in both countries, and proves that we have the advantage and can make cotton goods 4 per cent. cheaper than they can be made in England. These statistics are of great value; for they dissipate the false opinion which has been inculcated so industriously, that labor is vastly cheaper in England than here, and that she, by means of the abject poverty of her operatives, has the ability to overwhelm and destroy our manufacturers, unless they are saved by high duties. There has been a great deal written, and facts have been abundantly stated, proving the truth; yet some men high in honor have not yet left off talking about the degradation which Americans must suffer if left to contend unprotected against the "pauper labor" of Europe. The fact is, that American manufacturers are able to pay the wages which have been so much complained of, and so enable our laborers to maintain their own respectability and that of their families, and yet sell their fabrics all over the world cheaper than the English. In the supply of our own market with plain cotton goods the advantage in favor of the American manufacturer stands about thus:—

Greater cheapness in prime cost of the goods,	4 per cent.
Difference of interest, freight and other charges of importation,	9
	13
Duty according to compromise,	20
	33

It is proved by these facts, that neither the success of our manufacturers, nor the honor of our laboring population, nor the furtherance of a home market for the products of agriculture, require an increase of duty for the purposes of protection. The American manufacturer, as the matter will stand two years hence, will be protected by an advantage over Englishmen of 33 per cent. In other words, the goods which cost the American manufacturer ten cents a yard, the American consumer must pay him 13 cents for, before the ascending scale of profits will be checked by foreign competition. In our judgment, the agricultural interests of the country would show little of the sagacity for which the Yankees are famed, if they should be led to make farther sacrifices in favor of manufacturers. The spinning of cotton is a business as firmly established in our country as the grinding of wheat, and no more needs protection. In truth it has a much broader field of enterprise, and is less encumbered by competition. The manufacturing interest of our country in all its branches has great reason to be satisfied with its present position. Manufacturing was never so healthy under the American system as it has been since that system was overthrown. At no period in our history have the prospects of our manufacturers been so good as they are at this moment. The mushroom growth of establishments has in a great measure ceased. Men who know nothing of manufacturing have learned to abstain from it. The same prudential principles have been found applicable to this as to all other branches of business. It has been learned that, as in other avocations, so in manufacturing, a man must understand his business and manage it himself. There is nothing which our manufacturers have to fear so much, as an abandonment of these sound maxims, and a return to political gambling for manufacturing prosperity. We are glad to know that in all this we speak the sentiments of the more intelligent portion of our manufacturers. There is no danger that those who are now engaged in manufacturing, will not find domestic competition springing up fast enough around them, without the stimulants of a high tariff. Nor is there any danger that the home market for the products of agriculture, will not be enlarged as fast as the best interests of the country require. The business of spinning cotton, though recently depressed, has not at any moment within the last three years been carried on in well regulated establishments at a very great loss. And now such establishments are making good profits on all the goods they can turn out, and are unable to keep pace with the demand. In the coming five years there will be a great increase of cotton factories in this country. This business will enlarge itself more, in all probability, than any other; and the enlargement will be created by the stimulant of high profits. Since, then, the manufacturers have been placed in the very best possible position, we trust they will be too sagacious to abandon it.

We annex same extracts from the Chronicle article, taken from the Boston Daily Advertiser.

The Cotton Manufacture of the United States compared with that of Great Britain.

The last number of the Monthly Chronicle contains an analysis of an important work lately published at Glasgow; by "James Montgomery, superintendent of the York Factory, at Saco, Maine." The author is an Englishman, and is well acquainted with the state of the cotton manufacture in Great Britain, by many years' practical acquaintance with the business, and he has also become acquainted with the state of the

manufacture in this country by four years' experience and observation, under the most favorable circumstances. His work is, therefore, full of facts of great interest, and which it is important for the manufacturers of this country to know. The article in the Monthly Chronicle, to which we refer, gives an analysis of the more important facts, with tables abridged from the work, giving the comparative prices of each description of machinery, and each branch of labor. It is too long for publication in a newspaper, but we here give the general recapitulation of the estimates there presented, showing the cost and produce of an American and an English cotton mill of the description there given, with the general remarks of the Chronicle, which we recommend to the attention of those who are interested in this subject.

Recapitulation.

EXPENSES OF OUTFIT.

	In America.	*Gr. Brit.*
Cost of buildings, &c. - -	$44,000	$11,904 00
Machinery in preparation department, - - - -	21,662	14,401 60
Do in spinning do	23,554	8,920 32
Do in weaving do	14,620	8,227 20
Total - -	$103,836	$43,453 12

EXPENSES PER FORTNIGHT.

Preparation department -	$250 50	$87 36
Spinning do - -	224 00	124 16
Weaving do - -	734 95	477 70
General charges - - -	161 00	101 76
Miscellaneous charges - -	584 00	332 64
Total - -	$1,954 45	$1,123 62

PRODUCE PER FORTNIGHT.

Throstle warp spinning, spindles, [Am. 18's; Br. 16's yarn,] - - - -	2,880	2,160
Speed - - - -	4,700	4,400
Pounds produced - -	10,080	6,345
Hanks do - - -	181,440	101,520
Do per spindle - -	63	47
Weft, No. 18, spindles [Am. throstle; Br. mule,] -	2,112	2,400
Speed - - - -	4,700	4,200
Pounds produced - -	7,744	5,660
Hanks do - -	139,392	102,000
Do per spindle - -	66	42½
Pieces* of cloth woven from 128 looms, - - -	1,710	1,408
Yards woven - - -	51,300	35,200
Speed of looms per minute	120	95
Effective shots obtained -	104	77½

From the foregoing estimates, is deduced the comparative cost of manufacture in the two countries. The expenses of a fortnight's operation in the American Mill, $1954 45, divided by the number of yards produced, gives the cost of a yard 3 4-5 cts. The expense of the British mill for the same period $1133 62 cts., divided by 35,200 yards, gives a cost of 3 1-5 cents per yard. The difference of cost 3-5 of a cent is equal to an excess of 19 per cent. in the cost of the American manufacture over the British, the former, though narrower, being the heaviest cloth, and containing the most threads.

To this is added an estimate of the comparative cost of the raw material to the British and American manufacturer. The charges to the British manufacturer, on the import of cotton from an American southern port, for shipment, freight, insurance, importer's profit, duty and inland carriage, are estimated at 27 1-2 per cent., which supposing the cost of the cotton at the place of shipment to be 7d. or 14 cents, and supposing 2-5 of a pound of cotton to be required for a yard of cloth, makes the original cost of cotton 5 1-2 cents, and the cost in England 7 cents for each yard of cloth. The charges to the American manufacturer, are estimated at 11 per cent. on the cost of cotton at the exporting market, or 6 1-5 cts. at the mill for the quantity required for a yard of cloth. The American manufacturer, therefore, has the advantage of 4-5 of a cent per yard in the cost of the raw material, while the English manufacturer, has the advantage of 3 5 of a cent in the cost of manufacture; making the advantage in the aggregate in favor of the American manufacture 1-5 of a cent. per yard, or 1-35 or 3 per cent. nearly in the whole cost.

From other modes of calculation, it will be apparent that in the cost of cotton, the American manufacturer has the advantage of about half a cent a pound in the freight from the place of production, as much more in being free from import duty, and probably another half cent in the difference of other charges. This makes a great difference in his favor.

In reference to the comparative expense of the cotton manufacturers, in Great Britain and this country, the author remarks as follows:

"That the general rate of wages is higher in the United States than in Britain is admitted, particularly the wages of females employed in the factories. The greater part of these are farmers' daughters, who go into the factories only for a short time, until they make a little money, and then "clear out," as it is called: so that there is a continual changing amongst them, and in all the places I have visited, they are generally scarce; on that account the manufacturers are under the necessity of paying high wages, as an inducement for girls to prefer working in the factories to house-work; and while this state of things continues, it is not to be expected that wages in this country will be so low as in Great Britain; and although they have undergone a considerable reduction during the late depression still they are higher than in any part of Britain."

"Throstle spinning is nearly as cheap in this country as in Britian, in consequence of the higher speed at which the spinning frames are driven and the greater quantity of work produced in a given time. But the price of carding is fully double that paid in Britian, because here, men are generally employed to attend the cards, spreading, scatching machines, &c., while the same work is done by boys and girls in Britain. The lowest wages paid to any girl in the card room, that I am aware of, is one dollar per week and her board; and taking her board at the lowest rate, viz: one dollar and twenty cents per week, her wages in all will amount to two dollars twenty cents, equal to 10s. sterling per week. The average rate of wages for girls in the card room, may

* The American pieces of 2,400 threads, a three-leafed tweel, 18's warp, 30 inches broad, 30 yards long, weighing 10 lbs.; the British, a shirting 2,000 threads, 16's warp, 18's weft, 35 inches broad, 25 yards long, weighed 8½ lbs.

vary from 11s. to 12s. 6d. per week. Men's wages may vary from 13s. to 18s. per week. Thus in every department, the rate of wages is generally higher in the United States than in Britian: nor do I think that they will, at least for many years, be so low in this country as in Great Britain.

"The price of living here is higher, and the hours of labor longer, besides the greater part of the factory workers being connected with farming, whenever wages become reduced so low, as to cease to operate as an inducement to prefer factory labor above any other to which they can turn their attention, then a great many factories will have to shut up. During a stagnation of trade, it is common for the manufacturers here to stop a part, or the whole of their factories, and then the workers retire to their farms; such was the case in 1837, when a vast number of factories were entirely shut up. Yet it seemed not to affect the workers very materially; indeed, many of the girls who had been some time in a factory, seemed to rejoice and regard it as a time of recreation; so that the manufacturing population of America are an entirely different class, and placed in very different circumstances from those of Great Britain, and very great changes must take place before the wages in the former can be so low as in the latter country; and, indeed, the manufacturers here can afford to pay higher wages than the British, because they run their factories longer hours, and drive their machinery, at a higher speed, from which they produce a much greater quantity of work, at the same time they can purchase their cotton at least one penny a pound cheaper, and their water power does not cost above one-fourth of the same in Great Britain. But though wages cannot be reduced much lower than they are at present, there are other means by which manufacturers might abridge their expenditure. Their establishments might be erected at much less expense—a more improved arrangement might be adopted—and the work conducted with much more economy. All these, however, are matters which the Americans will very speedily learn; every successive depression of trade will lead them more and more to see the necessity of managing every department of the business with the least possible expense; and as soon as they can equal the British in this, they will be able to compete with them, and that successfully too, in any market whatever.

"The British have, no doubt, attained to great perfection in the art of manufacturing cotton goods; but whether they will be able to maintain that high pre-eminence to which they have arrived, or have to yield to the increasing improvements of foreign nations, are questions difficult of solution. Their most powerful rivals are, doubtless, the Americans. The manufacturers of no other country can purchase their cotton so cheap, and it is presumed no country possesses so extensive water privileges; only a small portion of which have as yet been occupied. If we add to these the intelligence and enterprising spirit of the people, it will at once be obvious to every unprejudiced mind, that the American manufacturers are the most formidable competitors with which the British have to contend in foreign neutral markets."

It will be observed that the foregoing estimate embraces no computation of the cost of working power or of the comparative expense of steam and water power. The estimate of 7 1-2 per cent. for the wear and tear of machinery and buildings also, if intended to embrace, besides wear, the interest on capital, seems to be inadequate, and perhaps hardly more than sufficient to cover the charge of wear and repairs, in which case a further allowance of 6 per cent. in this country, and 5 in England, should be made for interest.

We can hardly imagine, however, that there is not some error in the estimate of the comparative cost of buildings in the two countries. The sum of $4,608, appears to be a very small sum for the cost of a building of the dimensions described, and we can hardly suppose it to be adequate to the erection of such a building in a style of strength and durability, bearing any comparison with buildings used for the same purpose in this country; since the difference of cost stated is evidently much greater than can be accounted for from the greater cheapness of labor and machinery in Great Britain.

The cost of water wheels and geering, and also of a steam engine, is given in the estimate above quoted, but no estimate is made of the cost of water power, or of coals for producing steam. These are important items, and the question of their comparative cost is one of considerable interest. We regret that it is overlooked in this work.

Among the miscellaneous articles at the close of the book, are calculations of the cost of water power as it is sold by the proprietors of the locks and canals at Lowell, Massachusetts, and also at Manayunk, Philadelphia. At Lowell, a mill power sufficient to carry 3,584 throstle spindles, with the accompanying machinery, computed to be equal to 54 1-2 horse powers, together with four acres of land, is sold at the rate of $4 a spindle, amounting to $14,336. Deducting $3,436 for the value of the land, it leaves $10,900 for the cost of the water power, or $200 per horse power, the interest of which at 6 per cent. is $12 per annum. At Manayunk, water power has been sold at a much higher rate, viz. at a rate computed to be equal to $1,016 per horse power or a rent of $60 96 per annum. The first of these statements may be considered as affording a just criterion of the cost of water power in this country in an eligible position for extensive manufacturing operations.

Among the same miscellanies we find an estimate of the costs of steam power in a mill in Massachusetts, where an engine of 40 horse power carries 3,700 mule and throstle spindles with the accompanying machinery. This estimate is for cost for coal and attendance, $12 20 a day; which is equal to $3,782 per annum, and to $94 55 per horse power. This is exclusive of oil, packing, &c., which would swell the estimate to $100 per annum for each horse power. The only information given in the book relative to the cost of steam power in Great Britain, is the remark appended to the above statement, that the estimate there given is about double the cost of the same power in Glasgow. At this rate the cost of the steam in Glasgow is equal to four times the cost of that in Lowell.

In the testimony of Mr. Kempton, given on an examination by a committee of the house of com-

mons, as quoted in a pamphlet on the factory question, by Rev. R. H. Gregg, published in London, in 1837, the cost of steam power in England is stated to be £12 10s., (or $60) per horse power. If this be a correct statement, and if we offset the cost and repairs of the engine against the cost and maintenance of the water wheel, we have the cost of steam power in England, equal to five times that of water power, at one of the principal manufacturing towns in this country. This difference however in the cost of power is reduced to the proportion of about two to one, if the author's estimate be correct, of the greater amount of power required in the American mills in consequence of the exclusive use of the throstle spindle. The cost of power thus estimated, which should be added to the author's computation of the cost of manufacture of a yard of cloth, is equal to 1-14 of a cent in the American mill and 1-6 in the British mill; the difference of power being about 1-11 of a cent in the cost of each yard of cloth. If the machinery in the American mill were of the same kind as that in the English mill, the difference in the cost of power would be about 1-8 of a cent. This difference, although it seems insignificant in the cost of a single yard of cloth, is an item of some importance in the expenses of a year, and amounts to about 1 per cent. on the whole cost of manufacture, including that of the raw material. If the author's estimate of the difference in the cost of manufacture be correct, the addition of this advantage swells that difference to 4 per cent.

It will be observed that these computations apply only to those branches of the cotton manufacture, to which the advantages of mechanical power can be applied with the greatest effect, and which the experience of our countrymen has enabled them to prosecute most successfully, and not at all to the finer and more complicated manufactures, which require the application of a greater amount of manual labor, and of skill which is the result of continued experience. Yet this result presents a most encouraging view of the prospects of this important manufacture in this country. It shows that in the manufacture of those descriptions of cloth for which there is much the greatest demand, the mills of this country are at this moment able to sustain a competition with the most favorably situated establishments of Great Britain, and to supply the articles produced at equal prices in markets foreign to both countries. But this is not all. The whole comparison shows that those items in the computation which produce a result in our favor, are of a permanent character, secured to us by our national position, and of which we cannot be deprived; while a portion of those, in which we labor under a disadvantage, will change in process of time, and render the general result of the comparison still more favorable to us. This remark will apply particularly to deficiencies in economical management, deficiencies in certain portions of the machinery and the want of equal experience and skill in a portion of the hands employed.

These considerations must relieve those who are interested in the American cotton manufacture, from any serious apprehensions of permanent decline of this branch of industry in this country. An ample pledge for the continuance of a demand for the products of this manufacture, is to be found in the universal want of the civilized world, of a material which can be in no other way so cheaply supplied. If this material could be furnished by foreign laborers on better terms than by our own, the American manufacturer might well feel, that he held his command over the market, even of his own country, by an uncertain tenure. But if it be proved that the advantages of his position are such, that notwithstanding the materially higher cost of labor in this country than in Europe, he can still furnish his products at a price at which he cannot be underbid, even in a foreign market, by the manufacturers of any other country, his position is as safe and independent, as in the nature of things the emoluments of any occupation can be.

ANSWERS TO GENERAL QUERIES* ON MARLING, IN REGARD TO GREEN-SAND MARL USED ON THE PAMUNKEY RIVER LANDS.

(Continued from p. 689, vol. 8.)

V. *Answers of Edmund F. Wickham in regard to the use of marl, on his South Wales farm, Hanover county.*

Answers to 1*st. Query.*—I commenced the use of marl in 1824.

2*d.*—It was my property, and in a general way under the management of an overseer then and now. He follows my directions with sufficient exactness.

3*d.*—In 1824 there were about 545 acres of cleared land, exclusive of some open land in the forest.

4*th.*—I have cleared about 40 acres since, of land somewhat similar, but inferior to the rest of the farm, making in all 585 acres, between the public road and the river. To this part of the farm my marl and manure have been exclusively applied. I do not include a clearing of about 225 acres of forest land, which is used for a standing pasture, &c., and which will not be embraced in my answers.

5*th.*—In the early part of my operations my progress in marling was slow. For the last ten years I have been thoroughly satisfied of the great importance of this work, and my overseer knows that I am well pleased to hear he is actively engaged with all the force he can spare in hauling marl. I have marled to this time not less than 425 acres. This winter I am engaged in marling a second time the land which I first marled in 1824.

6*th.*—The marl I use is taken from the pits of my brother William F. Wickham. He estimates the quantity of carbonate of lime at 45 per centum. My South Wales farm is situated on the South Anna river just at the junction of the North and South Anna rivers, [which form the Pamunkey.] I have repeatedly dug and bored for marl on my land, without finding it. At several points on the river side where the plant you term the "marl indicator" is found growing with great luxuriance in the water, which oozes out of the bank, I have sunk deep pits, and made diligent search, hoping to discover

* The queries are repeated on page 24 of this No.

marl, but without finding it. From my want of success, I am led to believe the marl indicator does not always point out with absolute certainty the presence of marl, as one would infer from a communication in your Farmers' Register vol. 6, page 454. As far as I am informed, marl has not been found in a single instance on the South Anna river, above its junction with the North Anna.

7*th.* and 8*th.*—There is some green-sand in the marl I use, but what proportion I cannot say. There are no hard masses of marl to diminish its value.*

9*th.*—My constant aim is to apply about 600 bushels of marl to the acre.

10*th.*—I have never knowingly used less than 500 bushels.

11*th.*—I have made no trial of any much heavier dressings. I believe the carbonate of lime is the chief fertilizing principle contained in the marl, and I endeavor to apply to each acre, as near as I can, 300 bushels of lime. Had I not so great a distance to haul the marl, I would apply more than 600 bushels of marl to the acre.

12*th.*—Previous to my use of marl, the farm was cultivated on the three-field system, corn, wheat and pasture.

13*th.*—The same system was pursued until 1826, when I commenced with the four-field rotation, wheat, corn, wheat, and one year in clover, which I still continue, and am very partial to it. My farm has improved rapidly under this course. I believe it yields greater fertility to the land, and more profit to the owner, than any other system. If your clover is not grazed, but turned under for the wheat, all the materials afforded by the crops converted into manure, and due diligence used to get out marl, which is one of the main, if not the chief pillar in the system, I feel confident the land will improve rapidly, and your fields be kept clear of blue grass, which is often so prejudicial to wheat, after a clover lay of two years' standing. At present this rotation appears to have lost some favor with Mr. Selden of Westover, and Mr. Carter of Shirley; but I anticipate their return to it, with additional encomiums, before many years elapse.

14*th.*—On the crops next following, when no manure was mixed with the marl, which was sometimes the case, when I first commenced the use of it, the benefit was not so great. Its effect on the clover which succeeded was very apparent. It acts more immediately on stiff than on light land.

15*th.*—The earliest effects of the marl have increased and continue to increase.

16*th.*—I do not apprehend any diminution from the increased product of my marled land. I esteem it a most valuable and lasting manure.

17*th.*—My land has sustained no damage by applying marl too heavily.

18*th.*—I find the manure from my farm-pen and stable yard, when mixed with marl, decidedly more efficacious on the first crop, and feel confident it is rendered more permanent. Wherever manure is put out, marl should be spread with it, and both ploughed in together. Gypsum acts well on clover.

19*th.*—I should suppose the average productive power of my land in corn before marling was from three to three and a half barrels per acre.

20*th.*—The present average is from six to seven barrels per acre.

21*st.*—My crops of wheat have varied with the season. They have increased at least in the same proportion with the corn crop.

22*d.*—I estimate the increased product of my land, from the use of marl and other manures, at an average of near 100 per centum. The chief advantage has resulted from the marl, as it enabled me to extend my improvement the more rapidly, and by the increase of my crops has furnished more materials to enlarge the amount of putrescent manures.

23*d.*—My observation does not contradict any of the important theoretical opinions advanced in your 'Essay on Calcareous Manures;' but, on the contrary, my experience every year convinces me more and more of the great importance of the views brought forward in that valuable work. The benefits already derived from it have been great, and as yet they are but in their infancy. I am firmly convinced your Essay is destined to work a vast improvement throughout the whole marl region of the United States, and, if the farmers will zealously work on the principles there laid down, it will be the means of converting an arid and sterile country into one abounding in every thing that can delight, and reward the toils of the husbandman. You have cause to congratulate yourself on the great aid you have rendered to the agricultural community.

December 15*th*, 1840.

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* From three principal diggings of Mr. W. F. Wickham, which are those also used by Mr. Edmund F. Wickham, specimens deemed of average strength were carefully selected, and reported at p. 684 of vol. 8. The proportion of carbonate of lime ascertained accurately, and also the green-sand as merely fixed by the eye, were as follows:

	No. 1	No. 2	No. 3
Carbonate of lime in 100 grains	32.50	44	36
Green-sand	22	8	5

ON THE SOILS, AND MARLING IMPROVEMENTS OF KING WILLIAM COUNTY. INTRODUCTORY TO ANSWERS TO THE GENERAL QUERIES ON MARLING.

By the Editor.

The county of King William is the lower part of the peninsula formed by the Pamunkey and Mattapony rivers. The soils of the county may be classed in four general divisions, viz.: 1. the Pamunkey low lands (described at page 679 of vol. viii.); 2. the Mattapony low lands, which are still more sandy than the former, and of inferior quality; 3. the level high land draining towards the Pamunkey, which is most generally very stiff, and 4. those draining into the Mattapony, which are as remarkable for extreme sandiness. The line of separation between these two last divisions is not precisely the ridge, or summit level, which separates the water flowing in opposite directions to the two rivers, but is nearly so. In my

recent hasty visit to the county, my personal observations were almost confined to the first and third of the above divisions, not having seen any of the Mattapony low-grounds, and very little of the sandy high or "forest land," that being the common designation in this and the neighboring counties for the high and naturally poor lands back from the rivers, and which name has no relation to the existence of trees on the land. Hence the term "forest land" before used in the fourth of the queries on marling, would here be misconstrued, unless explained to mean *wood-land*, as it was designed, and as it will now be changed for.

The high or "forest" land, or "ridge" land, as I have elsewhere termed such, whether of the stiff or light class, was originally poor, as such soils are every where else in the tide-water region of Virginia. Before I had seen any of this stiff kind, it was so described to me by Mr. Fontaine, (in reference to his own farm,) that I recognized it at once as the same kind which forms a small part of the Coggins' farm, which I formerly occupied, and nearly the whole of the Maycox farm adjoining, and much other land in that neighborhood. The peculiar marks of this very base soil were described at page 40 of the 'Essay on Calcareous Manures,' as the subject of several marling experiments; and on referring to the description copied below, Mr. Fontaine declared the perfect resemblance, and adopted the description for his own general soil, with the slight exceptions which he states in his answer.

The description given of that portion of my own land was as follows; and so far as I saw of the high level stiff land of King William, my own observation, as well as the better authority and testimony of a resident cultivator, declared the resemblance to be very close:

"The soil is very stiff, close, and intractable under cultivation—seems to contain scarcely any sand—but in fact, about one-half of it is composed of silicious sand, which is so fine, when separated, as to feel like flour. Only a small proportion of the sand is coarser than this state of impalpable powder. Aluminous earth of a dirty fawn color forms nearly all of its remaining ingredients. Before being cleared, the soil is not an inch deep, and all below for some feet is apparently composed of the like parts of clay and fine sand. This is decidedly the most worthless kind of soil, in its natural state, that our district furnishes. It is better for wheat than for corn, though its product is contemptible in every thing. It is difficult to be made wet, or dry—and therefore suffers more than other soils from both dry and wet seasons, but especially from the former. It is almost always either too wet or too dry for ploughing—and sometimes it will pass through both states, in two or three clear and warm days. If broken up early in winter, the soil, instead of being pulverized by frost, like most clay lands, runs together again by freezing and thrawing—and by March, will have a sleek (though not a very even) crust upon the surface, quite too hard to plant on before a second ploughing. The natural growth is principally white and red oaks, a smaller proportion of pine, and whortleberry bushes throughout."

In addition to the ordinary acid character which I have elsewhere attributed to this kind of land, in common with all other of our naturally poor soils, and which acid is of vegetable formation, I have long believed this very peculiar kind of soil (as known under my own cultivation) to contain also a portion of *sulphuric acid*, either free, or in combination with iron or alumine. The reasons are stated at pages 50, 51, of the work above quoted from. If this supposition is correct, it serves to explain several strange and otherwise inexplicable circumstances, viz.: the remarkable sterility before marling—the non-effect of gypsum not only *before* marling, (as on all other acid soils,) but also *after* marling, contrary to the result on most other soils—and the remarkable and great growth of the first clover *after* marling, as if receiving the greatest possible benefits of gypsum. And in fact so it is, if my supposition of the previous presence of sulphuric acid is correct; for, by union with the lime of the marl, that acid, or its compounds, would be necessarily converted to gypsum, and in such quantity that any additional dressing of gypsum given at the same or an early time, being superfluous, could have no additional effect. Mr. Fontaine has 200 acres of wood-land of this kind marled before clearing. The soil seemed already deepened and improved (from almost nothing) by this mere top-dressing of two years old; and if permitted so to remain for 10 years before killing the trees for cultivation, I have no doubt that the delay, as well as the marling, will be well paid for in the greater than ordinary improvement from such an application. The earlier and particular effects of marl on this soil may be seen in the answers to the general queries which will follow.*

One of the earliest successful and noted experiments with marl was made in King William, by Mr. Richard Hill. Whether his trial was earlier or later than my first, (in 1818,) I could not learn positively; but it was somewhere about the same time.† I heard the first intimation of it some time after my own practice was in successful progress, and since, from time to time, by loose and uncertain rumor. The first account heard was of remarkable improvement from the marling; next, after some years, that the land was "ruined" by the marl, and was good for nothing. It seems that the first benefits had not induced a regular continuation in the practice, either by Mr. Hill or any of his countymen; and this disastrous result discouraged further efforts, until after the lapse of some 10 or more years, and the establishment of a better understanding of the cause of injury. Dr. William Westmore began and made great and profitable improvements by marling on the adjacent field of similar very sandy soil. The effects of this part of the operations of this now deceased successful marler and estimable man, I visited, as well as the subject of Mr. Hill's earlier experiment, adjoining. The latter is on the Rumford Academy tract, and adjoining the public road. The present occupant, Mr. Christian, was from home, and I could get no particular information of the treatment of the land after it had been "ruined by

* The Pampatike land, the subject of Mr. Carter's answers which will follow, was generally of this stiff and otherwise bad character. The crop of corn on it seemed to my eye as much as seven barrels to the acre.

† Mr. Fontaine, on further inquiry, heard, and informed me by letter, that it was in 1816.

marl," until of late years. But whether it was otherwise manured (of which, however, I could not hear any thing from neighboring gentlemen) or not, it is certain that the whole piece (10 or more acres) is now in a very productive state, though said to have been, for the last 7 or 8 years, under a perpetual succession of corn and oats, and without manure at least during that time. It had been in corn this year; but as the whole crop, stalks included, had been removed, I could not judge as to the product. Mr. Fontaine had heard that an acre which had been marked off, and the product measured at the time of gathering, made rather more than nine barrels (45 bushels) of corn. These accounts are, however, all very uncertain—and I would not record them, but for the fear that the facts may become still more uncertain by lapse of time. If this loose, and doubtless incorrect statement, should meet the eye of any one better informed, I hope he will furnish any necessary corrections, so as to preserve the interesting facts of this one of the largest and earliest experiments of marling in Virginia. Mr. Richard Hill has long removed from his former residence, and I know not his present home, but care shall be used to place this article in his hands, after its publication.*

Marl is supplied most bountifully to this county, so that numerous landholders own beds, and none are far removed from some of good quality. It was stated in the report of Pamunkey marl (page 679, vol. 8.) that all of that locality was green-sand marl—and of the *eocene* kind, or more ancient deposite. On the contrary, all of the high-lands (or "forest" as here distinguished) is simply calcareous marl, and such as I have been most conversant with in Prince George. That is, if it contains any green-sand, or other fertilizing ingredient other than the shelly matter, it is in too small proportion for its *separate* or additional effect to be appreciated—and more than I even suspected to exist, until very recently.

Most of these marls are of the dingy light color which I have elsewhere called yellow, and which I find that some call red. There is also blue marl, of good quality, but which some persons are afraid to use, because supposing it may be injurious. This erroneous opinion is founded on the fact that some spots of land have been manifestly and greatly injured in product by a bluish clay, or "blue fuller" as here called, and which, from the slight examination which I gave to two kinds only, and the report of effects found elsewhere, I doubt not is entirely destitute of calcareous matter, and is also impregnated with sulphates, or alum, both of which are poisonous to soil and plants; and sometimes the presence of uncombined sulphur is manifest to the sense of smelling. But as calcareous matter decomposes both these sulphates, and with the acid element forms a new manure, gypsum, (plaster of Paris,) their continued existence is impossible in contact with shelly matter. Therefore, if shelly or calcareous matter is present, the existence of any injurious ingredient need not be feared; and even the acid and poisonous principles of the "blue fuller," will be converted to a manure, if applied with or after marl; though the cost would probably exceed the benefit thus to be derived from the clay.

As in most other places, the people of this county have been slow in availing themselves of the great advantages offered by their marl beds. Still, every body who possesses marl has used it to some extent, and some to great extent. The great error, as usual elsewhere, with all but a few, is that they do not employ a regular force at marling, throughout the year, but only work at it when the teams and hands can be spared from the regular farming operations. Such transient and irregular labors are always performed at great disadvantage, even if the farmer's overseer will permit any "leisure time" to be found for the purpose. If, on the contrary, but one horse were kept regularly hauling marl from the pit to the field, where marl is as convenient as in many parts of King William county, the first year's manuring with that small force alone would amount to more than all that is done by a large farm force in the usual irregular manner, and at uncertain times. And neither would the regular employment of the small force preclude the using the irregular and large—but would make it twice as useful, by making every thing ready for the employment whenever a leisure time occurred. Capt. Drury, an energetic and good farmer, had but recently discovered marl on his land; and at the short leisure time of the remainder of the same season, he marled as much as 70 acres for his next year's cultivation. This was a great and praise-worthy effort, and he has been well rewarded for it, in the evident increased product and fertility of the land. But still, as he admitted to me, the injury to his teams by this effort, and the mode of the unusual employment, was greater than would have paid for the performance of the same amount of hauling, by regular and steady work continued throughout the year.

Nov. 10th, 1840.

Postscript.

The long delay of publication of the above remarks (which were written early in November,) has enabled me to accompany them by an answer from Mr. Richard Hill, whose present residence I was afterwards enabled to learn, and therefore to address to him a letter of inquiry concerning his very interesting, because very early, experiment of marling, in the case referred to above. It will be seen, according to his statement, that my information, gathered lately on the place, and in the neighborhood, was, as supposed, far from being accurate. Nevertheless, I leave my foregoing remarks precisely as at first written, subject to this later, as well as to any other future correction. It should be observed that Mr. Hill sold his land in 1822, since when he knows nothing of it except from loose report. But however great may be the uncertainty in regard to various minor points of Mr. Hill's marling, there is none as to the one main point, that is to say, the continued and increased beneficial effects of an application made as far back as 25 years ago. Though his letter was not written in reference to the general queries, and indeed does not bear on but a part of them, yet, being upon the oldest practice, it will be placed here as first in order of the few reports of answers obtained in regard to the marling of King William county.

* The information desired from Mr. Hill was obtained sooner than was expected, and will here follow this introductory article.

QUERIES (REPEATED FROM PAGE 489) TO ASCERTAIN THE ACTION AND EFFECTS OF SHELL MARL AS MANURE, IN GENERAL, AND ANSWERS AS TO THE (ORIGINALLY POOR) HIGHLANDS OF KING WILLIAM COUNTY.

1. When was the use of marl as manure commenced on your farm?
2. Whose property was the farm, and under whose direction was its general management, (if not your own,) then, and since?
3. What was the quantity of cleared land on the farm then ready for and subjected in its turn to cultivation of any kind, exclusive of all waste ground?
4. What is the quantity since added, by new clearings of wood-land, or other waste spots brought into tillage? And, generally, was the land thus added richer or poorer than the present average quality of the farm?
5. What was the rate of progress in extending the marling—and, altogether, how many acres have been now marled?
6. What was the usual strength of the marl used, or its proportion per cent. of carbonate of lime, or pure shelly matter?
7. Was there any peculiar quality or ingredient, besides the carbonate of lime, that served to give additional value to the manure—as "green sand," or gypsum, or a large proportion of fine clay, &c.?
8. Or was there any thing that served more than usually to lessen the value, as stony hardness of many shells, or of masses of marl, &c.?
9. What have been the usual quantities of marl applied to the acre?
10. Have there been made trials of any *much lighter dressings* of marl than the usual quantities—and if so, what were the results, compared to the usual quantities?
11. Have there been made trials of any *much heavier dressings* than the usual quantities—and with what comparative results?
12. Was the cropping and general management of the land, *for a few years immediately previous to its being marled*, such as might be considered *meliorating* or *improving*, (or at least as *preserving* its degree of fertility,) or was it *impoverishing*, and wasting of fertility in general? State the rotation of crops, if known.
13. The same question as to the few years immediately after marling, and since.
14. What have been the usual and general results of the applications of marl, on the increase of the crop next following, on land in different conditions—and afterwards to the present time?
15. Have the earliest fertilizing effects of marl (or the increased product of the first crop, or first course of crops in the rotation,) been subsequently increased or diminished by lapse of time—and in either case, under, and in proportion to, what circumstances?
16. Is it your opinion, whether founded on experience or observation, that the early increased product of your marled land (say for the first three or four crops, or of any number you have yet made thereon,) will be subsequently diminished, under any rotation of crops, or course of cultivation, that would not have been decidedly exhausting and injurious to the land, if marl had not been applied?
17. Has sterility, or other damage, been caused on any part of the land, by applying marl too heavily, or in any other manner—and under what circumstances of soil, tillage, &c.?
18. Has it been found that any other manures, either vegetable and putrescent, or mineral, are more efficacious, or durable, on poor natural soils *after* marling them?
19. What do you suppose was the average productive power, in corn, per acre, of all your now arable and cultivated land, before marling?
20. What do you suppose is the present average productive power of the same in corn?
21. What was the usual or average quantity of the crops of wheat made annually on the farm before marling, and recently?
22. Taking such general grounds for the estimate as may be satisfactory to your own judgment, state what you suppose to be the annual value of the present *general* or *average gross product* of grain, or other marketable products of the fields in cultivation, of the land marled, caused by, and owing to marling—per acre, and also in total amount annually from the whole farm?
23. Does your experience or observation serve to contradict any of the important theoretical opinions in regard to the action of marl, or statements of actual results in practice, as presented in the "recapitulation" embraced in pages 53 to 56 of 'Essay on Calcareous Manures'—and if so contradicting, in what particulars?

I. *Answers of Richard Hill, in regard to the Rumford Academy farm.*

Ashfield, near Richmond,
Nov. 27, 1840.

I received a few days past your letter of the 17th instant, and take the earliest moment to answer it. I fear that I shall not be able to give you the satisfaction you expect, on account of the great length of time that has elapsed since I left Rumford Academy, (18 years,) and not having committed to paper any thing relating to the experiments made by me in marling, besides being entirely out of the habit of writing, except on matters of business. In the year 1811 I purchased of Mr. Jno. Roane, sen., Rumford Academy, with about 300 acres of land attached thereto; all of which, except about 20 acres just around the buildings, lay on the west side of the main road as you go up the country, known for a great number of years back as the Burnt Ordinary field, and proverbial in all that time for its *extreme poverty*. In 1814, I commenced building a mill, and, in digging out the foundation, in a few feet of the surface struck upon a bed of marl, of which I thought but little, being more intent on the mill at that time than the im-

provement of land so very poor as to be beyond all hope of recovery. Nevertheless, having some corn growing not far from the mill, I carried a wheelbarrow full of marl, fresh from the pit, to be strewed between two corn-rows about the space of 25 yards, and the same quantity of marl between two more rows, and across the first, the same distance. This was done about the last of May or first of June, and the corn cultivated just as all the rest in the field. The marl produced not the least effect, for good or for evil. In the spring of 1815 I sowed the field in oats, and when the oats in the field generally were ancle high, the cross mark where the marl was put was knee high—the former being of a pale sickly color, the latter *deep geeen;* and might be seen at the distance of 300 yards. With this trifling experiment I was roused at once. There was no room for doubt, two facts were immediately established, viz., the great value of marl as a manure, &c., the certainty that it would not act on poor naked land until *it* was acted on by a winter's frost.* The land that this experiment was made on was very poor, light and sandy, but had not been grazed for several years. In the autumn of 1815 I commenced carrying out marl on the field for the next year's crop of corn, and in the beginning made a series of experiments. It was strewed on six rows about 400 yards long, 5½ feet apart, at the rate of 250 bushels to the acre. On six more adjoining at the rate of 300 bushels to the acre—on six at 400—six at 500, and so on up to 1000 bushels to the acre. The land very poor, acid, and much stiffer than that on which the first experiment was made. The rows on which the 250 and 300 bushels were put, produced the best corn, and all as high as 600 yielded double the quantity that it would have done without the marl; from 600 and upwards, the crop was less and less, and the 1000 bushels' rows brought *none*. The rest of the field was finished out at the rate of about 300 and 350 bushels to the acre. The whole field was put in wheat the succeeding autumn, and produced four times as much as it did in 1812—no disaster of any kind happening to either crop. The rows that received most benefit in the corn crop had the same effect on the wheat. The 1000 bushels rows had no wheat, and the year following had no grass, but was as naked as a wheat-treading yard. I continued to carry out the marl from year to year until the arable land was all dressed with it at the rate of about 250 to 350 bushels to the acre with the same beneficial effects as above described—no grazing allowed, and not a particle of manure of any kind except the marl on the land on the west side of the main road. On a piece of land that was the last of my experiments, after the marl, a crop of corn was taken off and the land seeded in wheat at the usual time, at the rate of three gallons to the acre, and rolled after seeding, and again rolled in March following. On this land I say I gathered 22 bushels of wheat for one sown; but I attribute the great yield as much to the roller as to the marl. The land was very poor, light and sandy, and during the growth of the wheat crop scarcely a spire of grass was to be seen in it. The year that this last mentioned crop of corn was made was remarkable for the great destruction by the cut-worm amongst the young corn. Mr. Jno. Roane cultivated a field in corn the same year, separated from mine only by the main road. His crop was so annoyed by the cut-worm that he told me he replanted it five times. In mine there was not one cut-worm to be seen. The spot you make inquiry about, on the right side of the road as you approach the house, I think was marled in 1815 or 1816 with about 400 bushels to the acre, but had been lightly manured previously and heavily cropped with corn, wheat or oats, and sometimes in Irish potatoes. That spot was much the stiffest land on the whole tract. There were two kinds of marl, each a mixture of a large portion of shells of every kind I ever saw, with brown earth of a chocolate color. The earth in one was stiff and adhesive, the other light and sandy. The light and sandy I used but little, and and that on stiff land; the other kind was used on all the light and sandy land, and on the greater part of the stiff. I found them equally efficacious, though I did not remain at the Academy long enough to determine whether or not the sandy marl would be as lasting in its effects as the clayey, of which I had my doubts. The land on which I applied the marl had, as I suppose, been cleared some 80 or 100 years, and abused as all the Virginia lands had been in the olden time. Judging from the growth on the uncleared land adjacent to the cleared, the stiffer parts I should think were very poor, cold, acid land, that would not produce more than 10 or 12 bushels of corn when first cleared. The lighter parts of the farm would have produced I imagine double that quantity, the land being much more lively. At the time I took possession at Rumford Academy, that part of the land on the west side of the public road, which constituted the whole of the arable land except, as I said above, about 20 acres round about the houses, would have yielded not more than five or six bushels of corn to the acre, and less wheat. At the time I sold the place (1822) the same land would have yielded fifteen bushels of corn, and as many bushels of wheat*—no other manure except the marl having been applied to it during my residence, and that only once, and at the rate per acre as abovementioned. In the year 1822 I sold the place to Mr. William Ruffin. What he did in the way of marling I know not. He afterwards sold it to Doctor Wm. B. Westmore, who succeeded astonishingly, as I have been told, in the improvement of the land by a second application of marl, and clover. Whether or not he used other manure with the marl I know not, but it is certain, from what I have been told by others, that the plantation was more improved when he left it,

* The latter inference was altogether mistaken. It was not the action of frost, but proper mixture of the marl with the soil which was wanting. If marl is first applied to land but the hour before planting corn thereon, and well mixed with all the ploughed depth, very great and most manifest effect will be seen by the the time the plants are four inches high—perhaps as early and as great effect as even a very rich putrescent manuring could produce in so short a time.—Ed.

* From a previous estimate made by Mr. Hill of product of wheat, it may be inferred that he here means fifteen bushels for one of seed, and not to the acre. As the usual mode of sowing seems to have been remarkably thin, fifteen for one might have been not more than 7 or 8 to the acre.—Ed.

[compared to its original state,] than any one in the county of King William. I should have mentioned that the spot on which I put 1000 bushels to the acre, by proper treatment now yields as well as any part of the farm. I have been told by farmers of the strictest veracity that at the time Dr. Westmore sold the place, it yielded double the quantity of corn and small grain that it did when I left it. He had followed up the improvement by sowing clover and by the use of leaves taken from the woods &c. &c.

I omitted to mention that the quantity of shell or lime in the marl was not ascertained during my experiments by analyzing it. According to my observation there were only two ingredients—earth and shell; no green-sand, no gypsum, no stony hardness of shell. RICHARD HILL.

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II. *Answers by William S. Fontaine, in regard to Fontainbleau farm, in King William county.*

1*st*.—In 1820, about ten acres were marled by a former proprietor; began myself in 1835.

2*d*.—I purchased of different individuals, two of whom previously had bought many small lots, most of them from William and Mary College, varying in quantity from 20 to 300 acres—the whole tract making at present 1300 acres. Under my personal direction since 1835.

3*d*.—About 400 acres had been cleared in many small detached pieces surrounded by pines.

4*th*.—200 acres since added by clearing—poorer than the previous average quality.

5*th*.—About 150 acres a year have been marled, some years a great deal more, and some less; 750 acres in all marled, including 200 acres still in woods.

6*th*.—The strength of the marl supposed to be about 60 per cent of calcareous matter. I have marled 4 acres with a blue marl, about 30 per cent.*

7*th*. and 8*th*.—No other ingredient (or any kind) unless "of fine clay" in the marl, which however has been but little used, and seems to be more suited to the light sandy land, than the yellow marl, which was the kind generally used.

9*th*.—The quantity applied the first year, 350 bushels per acre; since, 450 bushels on the clay, and 200 on the sandy land.

10*th*.—On some *light* and *very sandy* slopes, as little as 120 bushels have been used, with greater benefit than when much larger quantities were applied, the latter burning up the corn after the first rotation. Latterly, on such places I have hauled out the clay from he top of the banks, after mixing it with the marl; the improvement is more visible than when the marl and clay are used on different lands. As little as 200 bushels of marl have been applied on the clay lands. I do not know that any difference, between the effects of that and the heavier dressings of 450 bushels was observable, except that clover did not take so well on the former, and it is more difficult to scatter equally over the land the lighter, than the heavier dressing.

11*th*.—In 1835 I hauled out 2500 heaped bushels marl on 2 acres of rather sandy land, then in young pines; in 1836 planted in corn; estimated product 12 bushels to the acre. 1837 in wheat; very indifferent crop. 1838 in corn—marl-burnt—did not gather an ear. In the fall turned it under with a four-horse-plough, top dressed with manure, sowed in lucerne, 6 lbs. to acre, choked with weeds, particularly mullein, which was pulled up by hand; the few springs of lucerne left, very luxuriant. In 1841 will be in corn, when its recovery will be tested. To the eye this land is greatly improved.

12*th*.—The former cultivation was impoverishing, the two-shift rotation—1st, corn, 2d, wheat or oats, and grazed. No manure had been hauled out, except on a portion of that bought of Mr. Y. J. Clements.

13*th*.—The cultivation, since marling, meliorating—three-shift, corn, wheat, clover not grazed, with litter from the woods, and all the manure applied that could be raised.

14*th*.—On the poor level clay land, which formed the great body of the farm, and which is precisely similar to that described in page 40 of 'Essay on Calcareous Manures,' (except that the subsoil at the depth of six inches is a reddish yellow, and more clayey, besides standing wet weather better,) the improvement on the corn crop is slight indeed, scarcely perceptible the first year, unless where manure is used, then the increase is great, upwards of 50 per cent. Without the marl, the manure does but little good, and soon disappears. Clover will not grow at all on any of my land before marling—afterwards the crop is truly surprising on the clay lands. On the lighter lands I find the increase in the crop the first year, from marl alone, much greater than on the clay, fully 40 per cent. greater, or 50 to 60 in all, supposing the first benefit to the stiffest land to be only 10 to 20 per cent. There is a gradual and constant increase every year if the rotation is at all ameliorating, whilst the unmarled land, under the same treatment, continues at a stand. Clover does not grow on the sandy land well, unless plastered—it is otherwise on the clay.

15*th*.—The early effects of the marlings always increased subsequently.

16*th*.—My experience thus far is, that the early increased product of marled land is not subsequently diminished, but the contrary—the land marled by Wesley in 1820 will now produce 40 bushels per acre. This has had the benefit also of having been manured once, and of clover. Similar and adjoining land before marling did not produce more than six bushels.

17*th*.—On several sandy knolls injury has resulted from too much marl being applied, but easily recovered by manure or pine leaves.

18*th*.—Manure is much more efficacious after marling the land. Gypsum does not act at all before marling. It does afterwards on the sandy land. I am not certain as to the clay.

19*th*.—The average product in corn, before marl-

* Specimens of these, which were carefully selected by the reporter, aided by the direction of Mr. Fontaine, and afterwards analyzed, showed the yellowish marl, which is like the great body, to contain 57 per cent. of carbonate of lime, and the blue (which lies under the other) to contain 58 per cent.; so that the two may be considered as nearly equal as possible.—E. R.

ing, was about 8 bushels per acre.
20*th*.—Now it is 20 bushels to the acre.
21*st*.—The former average crop of wheat was 300 bushels—from 700 to 800 since marling.
22*d*.—The average value of annual increased product in grain, I think equal to $7 per acre—and $1700 from corn and wheat, not estimating hay, clover, cattle, &c.
23*d*.—It does not serve to contradict, but, on the other hand, to confirm the statements of the "recapitulation" in the 'Essay on Calcareous Manures.'

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III. *Answers by Thomas Robinson in regard to Mount Pisgah farm, on Mattapony river.*

Answer to 1*st query*.—The use of marl was commenced by myself, in 1834.
2*d*.—The property was my own, and under my personal direction ever since.
3*d*.—Quantity of cleared land then 200 acres.
4*th*.—Added since 20 acres, poorer by one-half than the general average of the whole farm.
5*th*.—The rate of marling from 20 to 50 acres per annum. 210 acres are now marled.
6*th*.—The marl supposed to be [from its similarity] about the strength of Capt. Fontaine's.*
7*th and* 8*th*.—No other ingredient known, as beneficial or otherwise, except a large proportion of fine light yellow clay.
9*th*.—About 200 bushels put to the acre.
10*th*.—I have marled as light as 150 bushels per acre, and found it more improving, after the first crop, than heavier marling. Heavy marling answers well the first crop, but is sure to fire, more and more every succeeding crop.
11*th*.—In 1817, on a very poor and sandy knoll, my father, Col. Beverley Robinson, hauled out from 1500 to 2000 bushels of marl to the acre. Fifteen acres were marled at this or probably a heavier rate. No manure has been applied to this land since. Nor has it made a crop of corn within my recollection—the crops being burnt up every time when in cultivation. The present year probably a barrel [5 bushels] to the acre has been gathered. Yet, to the eye, this land seems to be greatly improved, being darker and stiffer than the adjoining land more recently and lightly marled by myself, though before marling, from many indications, the first marled piece appears to have been more sandy than the adjoining land. The product of this piece of land in small grain is unknown to me, not having sown any on it since in my possession till this fall.
12*th*.—The previous cultivation was the three-shift rotation with close grazing. Impoverishing, of course.
13*th*.—The cultivation since has been on the three-shift rotation, but no grazing permitted.
14*th*.—The increase was supposed to be 25 per cent. the first year, and as much more annually to the present time.
15*th*.—The early effects have been increased.
16*th*.—I consider improvement made by marl permanent, and not to be diminished under any rotation of crops or course of cultivation.
17*th*.—On very light sandy soil, a reduction of product equal to one half has resulted from very heavy applications of marl.
18*th*.—I believe vegetable manures more durable after marling; but whether more efficacious at first I am unable to say.
19*th*.—The average product before marling was about five bushels of corn to the acre.
20*th*.—The present productive power equal to 20 bushels of corn.
21*st*.—About 100 bushels of wheat was the yearly crop previously. Now 50 bushels of wheat, and an increase of 100 per cent. upon the product of rye and oats, they being my principal small grain crops.
22*d*.—The increased value is about $8.50 per acre, in the increase from marling; and $700 in the annual value of the gross product caused by marling.

* Which was found by analysis to contain 57 per cent. of carbonate of lime. E. R.

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IV. *Answers of Thomas Carter, in regard to Pampatike farm, King William county.*

Answer to 1*st query*.—I commenced the use of marl in 1827.
2*d*.—Pampatike has always been my property, and was under my immediate management till 1836; since then I have continued to direct what crops should be put in, what land manured, &c., though I do not now reside there.
3*d*.—When I began to marl there were about 800 acres cleared.
4*th*.—I have since added nearly 400 acres, by purchase and clearing—independent of 150 acres of swamp land, which I reclaimed and cultivated two or three years, but have since been obliged to abandon. The land I have added was poorer than the average.
5*th*.—The number of acres marled per annum has been irregular. I have now marled upwards of 800 acres.
6*th*.—I have never analyzed the marl, and cannot tell its proportions. It is considered very rich.
7*th*.—I do not think there is any green-sand in my marl; nor do I believe it contains any gypsum. I have not used the green-sand with the marl; but I find it very advantageous mixed with other manure. There is no green-sand at Pampatike, and I procure what I use from Mr. Bassett's plantation. I decidedly prefer the marl.*
8*th*.—We sometimes find large masses of shells; but this is not very often. I do not think it makes much difference when put on the land with fine marl.
9*th*.—On all the land marled previous to 1839, I put from 500 to 600 bushels; since then about 300 bushels have been used per acre.
10*th*.—We have never put less than 300 bushels per acre. My overseer thinks it answers quite as well as 600 bushels.
11*th*.—I have never made trials of heavier dressings than above stated.

* The marl spoken of by Mr. Carter is merely *calcareous*. That which he calls "green-sand," obtained from Mr. Bassett's land, we infer is the green-sand marl used from the same place by Dr. Corbin Braxton and described at page 687, of vol. 8. Mr. Carter's preference (after trial and comparison) of the merely calcareous marl is a fact well worthy of note.—Ed.

12*th.*—The three-field system was used before I commenced marling, corn, wheat, pasture. Some few lots I manured very highly; they produced fine clover with the aid of plaster, but except these lots, the land was very thin.

13*th and* 14*th.*—The very first crop showed the great improvement made by the use of marl, but its effects are best seen by the crop of corn at present on the farm. It is the largest I have ever made per acre, on the marled land.

15*th and* 16*th.*—From my own experience I should say, the effects of marl are decidedly permanent. My land has been subject for the last few years to the severest cultivation. One half in corn, the other in wheat annually. By manuring heavily with vegetable matter and not allowing stock to graze on the land, I have been enabled, even with this rigid course, to prevent its deteriorating.

17*th.*—I do not think any injury has been done, except on the poorest land, by the too free use of marl; and, even there, by carting straw on the land, it has recovered from the effects of the marl.

18*th.*—All these manures are certainly more efficacious with marl than without.

19*th and* 20*th.*—Before using marl the average corn crop was from three to three and a half barrels. The marl has increased the product of the corn nearly 100 per cent.

21*st.*—The wheat has been so much injured by the fly, variable seasons, &c., I can hardly say in what ratio it has increased; but the crops are certainly much heavier than before I used marl.

22*d.*—From the use of marl, and other manures, I estimate the value of my crops as being nearly as much again as they were formerly.

23*d.*—As far as my experience goes, I know nothing to contradict the views advanced in the "Essay on Calcareous Manures."

VALUE OF THE OLIVE.

From the New Orleans Bulletin.

Whenever the value of the olive is fully understood in the southern section of the union, we may expect to see great attention paid to its culture. The importance of the product may be estimated from the various uses to which it is put. In Spain, Portugal, the south of France, and many provinces bordering on the Mediterranean, the olive oil is used in immense quantities, forming an excellent substitute for butter, hogs' lard, or any other kind of grease which is used in such quantities in more northern European climes, or in this country, for preparing food. Thomas Jefferson said that of all the gifts of Heaven to man, the olive tree was next to the most precious, if not the most precious. He thought it might claim a preference to bread, because there is such an infinitude of vegetables which it renders a profitable and comfortable nourishment. A single pound of olive oil, that can be bought for six or seven cents, is equivalent to many pounds of flesh, by the number of vegetables which it will prepare and render fit for food. This oil is palatable, wholesome and easily obtained. It is singular that the tree has never been introduced here in the south, where the soil and climate must doubtless be congenial to its growth. Wherever the orange grows, the olive will flourish—being a hardier tree—and it will live for ages, and bear abundantly. May we not hope that the enterprise of Louisiana will soon enrich the agricultural products of the state, by planting extensive orchards of the olive.

PUMPKIN SUGAR.

From the Magazine of Horticulture.

We find a notice in the *Gardener's Magazine*, of a method of manufacturing sugar from pumpkins, for which a patent has been procured by M. L. Hoffman of Hungary. M. Hoffman, together with M. Devay, has established a small manufactory of the article in Zamdor, in which they have already obtained forty hundred of sugar from pumpkins, a small part of which they have also refined. One hundred weight of pumpkins yields as much sugar as one hundred weight of beet roots, but the space of a hectare, viz.: two acres, one rood, and thirty-five perches, yields three or four times as large a quantity of pumpkins, (according to their weight,) as the beet root: the space occupied by Indian corn growing between the rows not being included, eight hundred weight of sugar could be raised on sixteen hundred square toises, from which two hundred hundred weight of pumpkins is obtained, and sometimes over two hundred and sixty hundred of pumpkins. M. Hoffman has obtained from between twenty-six and twenty-seven hundred weight of pumpkins, one hundred weight of sugar, and as much syrup. In making the sugar, the pumpkins are cut in pieces, and then, with the rind, are rubbed on a grating, the same as is used for beet root, and the seeds, which produce an excellent oil, are kept separate. One pound of oil is obtained from five pounds of seed. The juice is obtained from the grated pumpkins in the same manner as from beet root. M. Hoffman obtained, from an indifferent press, eighty-two pounds of juice, containing a proportion of sugar of from 3° to 10° according to Baunce. The juice is far preferable to that of beet root, because it does not so soon lose its virtue, but remains good twenty-four hours. It is purified and cleaned by the same process as beet sugar. The pumpkins should be cut up in pieces before they are grated.

This discovery may be of some importance to the agriculture of this country. In the west, where such immense crops of pumpkins may be produced, it will prove more profitable for cultivation than the sugar beet.

LIMING ON THE PENNSYLVANIA "BARRENS."

To the Editor of the Farmers' Register.

U. S. Ship Levant, Jan. 9, 1841.

I have been ordered to sea, and have broken up my farming establishment, and my object in writing this is to discontinue my subscription for the 'Farmers' Register.'

I wish you full success in your public-spirited publication, and consider it honorable to Virginia that an agricultural paper, of so high a scientific cast, is supported as well as yours is. Your efforts

to extend the use of marl and lime are beginning to be appreciated, and are operating upon the community to an extent of which you probably have no conception.

While on this subject, I will mention a circumstance in another state, which has recently come to my knowledge. I am a native of York, in Pennsylvania, and recollect, in my boyhood, hearing "the barrens" frequently spoken of. This was a large extent of sandy country, commencing about five miles from York, and proverbial for poverty. The land was considered scarcely worth accepting as a gift. A townsman, whom I met a few days ago, tells me that they have lately taken to liming this section, and that the value of it has in consequence suddenly started up to $50 per acre. Many of the farmers now prefer it to the rich but heavy soils by which it is surrounded, as they consider it less liable to suffer from the summer droughts. York and Lancaster counties, you know, are considered the garden of Pennsylvania: and it is a circumstance worthy of note, that a *sandy* region in their midst is beginning to have such a value merely from the use of lime. In my last visit to York, I was surprised to find how much the limestone quarries in that neighborhood had increased in value, and how rapidly the lime-kilns in the neighborhood of the town have multiplied, in consequence of the demand of this article for agricultural use. And this, it must be remembered, is in a region where farmers are proverbially skilful, and where they never throw away a cent on wild or useless schemes.

If you think think the above useful you are at liberty to publish it. GEO. JONES.

P. S. If any of your subscribers take pleasure in a fine-looking poultry yard, allow me to recommend the Bucks county (Pa.) fowls. They can be purchased in Philadelphia—cost high; but are of extraordinary size.

SEASONABLE HINTS.

The following extract from Col. Macerone's 'Seasonable Hints,' appeared in the *Mechanics' Magazine*, dated February 3, 1838. After stating the utility of sheep-skin clothing, for persons whose employment renders it necessary that they should be much out of doors, &c., he says--"I will not conclude without inviting the attention of your readers to a cheap and easy method of preserving their feet from wet and their boots from wear. I have only had three pair of boots for the last six years, (no shoes,) and I think that I shall not require any others for the next six years to come! The reason is, that I treat them in the following manner: I put a pound of tallow and half a pound of rosin into a pot on the fire; when melted and mixed, I warm the boots, and apply the hot stuff with a painter's brush, until neither the sole nor upper leathers will suck in any more. If it is desired that the boots should immediately take a polish, dissolve an ounce of bee's wax in an ounce of spirits of turpentine, to which add a tea-spoonful of lampblack. A day or two after the boots have been treated with the tallow and rosin, rub over them the wax in turpentine, but not before the fire. Thus the exterior will have a coat of wax alone, and shine like a mirror. Tallow, or any other grease, becomes rancid, and rots the stitching as well as the leather; but the rosin gives it an antiseptic quality which preserves the whole. Boots or shoes should be so large as to admit of wearing them with cork soles. Cork is so bad a conductor of heat, that, with it in the boot, the feet are always warm on the coldest stone floor.

EXTRACTS FROM THE ADDRESS OF JAMES M. GARNETT, TO THE AGRICULTURAL SOCIETY OF FREDERICKSBURG, VA., NOVEMBER 13TH 1840.

On this occasion, my friends, as on several other of our anniversary meetings, I shall commence what I have to say to you, with a detail of such experiments as I have made since we last assembled together. Although few in number, I hope they will be deemed, at least, equally interesting with any which I have heretofore communicated. And first, I will speak of Indian corn—that king of all grains; since it is not only our chief staple throughout all the tide-water portion of Virginia, but really has higher claims to our attention than all other grains, on account of the far greater variety of uses to which it can be applied. This should lead all corn-growers to continual experiments, with a view to ascertain which, among all the varieties now cultivated, is best for every purpose. And true it is, that many trials—called *experiments*—are frequently made, but most of them in a way so loose and inaccurate, as to leave the matter quite as much in doubt as before the trial. Thus each man is apt to have a pet corn of his own, which he fondly conceits is the best in the world, and consequently is almost sure to give it some advantage over all with which he compares it—if indeed, he ever prevails on himself to bring any others into competition with his favorite. Again, the few, comparatively speaking, who experiment at all, instead of making their trials as accurate as possible, by choosing similar ground of precisely the same dimensions and fertility, giving it similar culture, and then accurately measuring the quantities produced by each piece—generally content themselves with merely judging by sight. In all such cases, if the experimenters happen to be popular agriculturists, it is taken for granted by their admirers, that their opinions must be correct; and thus the varieties of corn which they recommend, frequently get into very extensive use, without having any just claims to preference. This we might all easily avoid, simply by making experiments for ourselves, with the necessary degree of care and nicety, instead of trusting implicitly to others, when under no necessity whatever to do so. But it is idle, perhaps, in me, or any other person, to preach against the most pernicious practice of unnecessarily *taking things for granted*, since thousands upon thousands of our race have been following it from the earliest records of time to the present day. It is the prolific, the inexhaustible source of all the fooleries, frauds, and humbugs that have ever prevailed throughout the world—none of which could ever have injured mankind to any great extent, but for their own highly culpable credulity. Let this suffice by way of pre-

face to my experiments, which I now proceed to give you.

The first made this year was—a second trial with the Chinese tree-corn, which I should prefer calling Thorburn's corn, as he introduced it, and very few plants that I have ever seen, are less like a tree. The result of this experiment was so similar to the one made in 1839, that I think myself warranted in forming the following conclusions in regard to it: First, it ripens sooner in our climate, than any of 6 or 8 early varieties that I have ever tried, except the golden Sioux, which is very unproductive. Secondly, it is fit to grind by the last of August, if planted by the first of April; and it will produce roasting ears in 90 days. In the next place, it is much more productive than any other dwarf-corn. And lastly, I infer from the two trials already made, that in all land of medium fertility, it will probably yield more per acre, although not more by the hill, than any of our common large varieties, since you may plant it so close as to have rather more than double the number of stalks. For instance, in land wherein the usual distance given to our common kinds of corn is five feet each way, with two stalks in a hill, the Chinese corn may be planted four feet by three, with the same number of stalks, which is as 12 to 25. This distance I gave it in both trials, and the produce last year was at the rate of six barrels and two bushels—this year, on similar land and with similar culture, it was at the rate of six barrels and one bushel. The ears, when perfect, will average about eight inches in length, sometimes as much as ten, having from eight to sixteen rows upon a cob, of middle sized whitish grain, very flinty and weighs within a fraction of 64 lbs. per bushel. Last year I stated the weight to be 58 lbs., but the corn was then weighed immediately after gathering, before it was thoroughly dry, which accounts for the difference here stated.

In the culture of this variety of corn, I have noticed more particularly than heretofore a circumstance which has often excited my attention, and for which I can in no way account, but on the supposition that the pollen or farina of the tassel, which impregnates the grain, often changes the constitution thereof, when different varieties are planted near each other, before the changes become visible; although it generally shows itself the first year. Thus the ear of corn, which I bought of Mr. Thorburn last spring twelve months, was covered with grain exactly alike in color, size, shape and texture; yet the produce of that ear consisted of at least six dissimilar varieties—if, indeed, what we call a variety is constituted (as we generally believe) by a difference in all the foregoing particulars. No other corn grew any where near this Chinese corn, and consequently each ear must have been impregnated from the tassels of some of the contiguous stalks. Another still more remarkable circumstance has occurred in gathering my twin corn, which constitutes nearly my whole crop. For four or five years I have been selecting the seed with the greatest care, and I believed that it was nearly pure. Yet a single and perfect ear has been found, in the midst of it, having 18 rows of small grain upon the cob, every one of which is of a deep reddish purple color, the like of which I have very rarely ever seen in any part of our country, and certainly never planted. Whence then came the pollen to impregnate this ear? Is it conceivable, can we believe it possible, that it was wafted for many, many miles in a mass sufficient to saturate each grain of this one ear, and that not a particle should have fallen on the silks of any other ear in the field? This seems past credibility, and must drive us to the conclusion that the *color*, at least, of corn, if not all its other characteristics, *may possibly* be changed by something else besides the pollen of the tassel.

I will here mention another circumstance relative to the physiology of the corn plant. In my last address, I stated as a fact which I supposed was known to every body, who had ever minutely examined a ear of corn, that the silk of the ear communicated immediately with the small end of the grain by which it was attached to the cob. This was represented by some writer in the Albany Cultivator, as an *error;* and he asserted, as a matter not to be doubted, that the silk was attached to the *outer* end of the grain. Unwilling to be positive, even when most confident that I am right, I determined to ascertain thoroughly, as soon as the season permitted, which was mistaken—my commentator or myself. For this purpose I examined, as accurately as possible, many ears of corn, and procured the aid of others, in searching most carefully, for silks connected with the *outer end* of the grain. Not one could we find; but we traced thousands to those points of the cob to which the small ends of the grain were attached. Here the ends of the silks adhered so firmly, as to require some little effort to pull them off, after the grain had been separated. I know not that the fact is of much consequence to corn growers in general. But it is of some importance to myself, as I deem it necessary to convince you, that on such occasions as the present, I never advance any opinion, or state any thing as a fact, which I have not maturely considered.

I attempted two other experiments with varieties of corn, which I had not tried before. One was a yellow kind from Lancaster county, there introduced from our Eastern Shore, under the name of Russel-corn, where it bears a high character. The other also was yellow, and from the great Valley of the Wabash in Indiana. The grain of the latter was very large, and more flinty than its produce, which somewhat resembles our yellow gourd-seed corn. The cobs have 16 rows of grain; but the stalks had only single ears, although in strong land, from which it is probable that in our climate this variety would not be more productive than some of our own yellow kinds. The former variety produced a better looking and heavier grain, to judge merely by the appearance; but it was not planted in a situation to enable me to form any correct opinion as to its relative productiveness. So far as this one trial will justify an opinion, I think that the Russel corn will probably prove preferable to the yellow kinds heretofore tried in this part of the country; although I have never yet met with any of that color, which would produce, (unless I greatly err,) within ten or fifteen per cent. as much as the most productive of our white kinds. This is a difference in quantity for which the higher price of the yellow, in our northern markets, will not compensate; to say nothing of the fact, that not one southern

man in a hundred, will ever eat yellow corn-bread, when he can get white. To *our* taste, there is nearly or quite as much difference between the two, as there is between a choke pear and a fine Seckel or bergamot.

Permit me here to call your attention to another circumstance relative to this invaluable grain —Indian corn—as it serves to confirm certain opinions which I have heretofore expressed in regard to its culture, that many have deemed very heterodox. In the Farmers' Register for last month, there is a letter from Mr. W. W. Stevenson, dated Little Rock, Arkansas, wherein he states, that in 1834 he planted a small lot of corn, in a light, silicious soil, with a red clay subsoil, the hills 4 feet apart. This he cultivated solely with the single coulter, running it both ways, seven or eight inches deep, the strokes 8 inches apart, and within 4 inches of the plants. The summer, he says, was very dry and warm, but his corn "*never twisted at any time*," although the coulter was used 4 times. In September he cut off some of the corn to make room for a building, and found roots more than 20 inches below the surface.

Now supposing this statement to be true, and we have reason to presume that it is so as the writer has given his name, it affords a strong confirmation of what I have often asserted, that the cutting of corn roots to a considerable degree, during its growth, does not injure the crop (if at all) to any thing like the extent to which the advocates of mere surface culture contend that it does. I certainly would neither adopt nor fully recommend Mr. Stevenson's practice. But I have often seen the most conclusive proofs that the free use of the coulter, particularly in all stiff land, was highly beneficial to corn in the early stages of its growth, and that no other implement could so well secure it against the effects of severe drought. It is equally advantageous to various other plants—for instance, a friend of mine tells me, that during the late very dry weather he coultered his turnips, and they remained perfectly green, when every other patch that he saw was much fired. Against these facts we have nothing but the theoretical reasoning on the subject of cutting the roots of growing plants. But plausible as it may seem to many, I *must* think that we should always be guided and governed by the former, when we find any difficulty in reconciling them with each other. That there should still be controversies in regard to almost every particular connected with the Indian corn crop, so that the best methods of managing it are matters yet undetermined among us, is much to be regretted. Nor is it less surprising when we consider that, at least in Virginia, corn has been our chief staple ever since the country was settled. But ignorance of the best methods must still be our portion, unless each corn-grower of our country, instead of conceiting his own ways to be best, (as too many of us constantly do,) would impartially and diligently pursue a course of comparative experiments between the modes most generally recommended, solely with a view to ascertain which was preferable. * * * *

I have repeated two experiments with Irish potatoes, both of which contribute to confirm opinions deduced from my previous trials. The first was by planting in hills, the shoots from growing roots, after these shoots were six or seven inches high. The ground was fresh, and of good quality, but not such as could be called rich: yet the produce was at the rate of 302 bushels per acre, of tubers more uniform both in size and shape, than any which I ever raised, either from whole or cut potatoes, in the common way, and there were fewer small ones among them—the general size being quite as large as usual. Indeed, I thought it larger, if there was any difference. The ground was worked twice with the hand-hoe. In this method there is a manifest and considerable saving of seed, whilst the labor is not greater than that of the common modes, nor indeed quite so great, while the produce is fully equal to any but that of my second experiment, which I now proceed to state. This was made with the common, round, yellow potato, some of which had skins of a reddish purple color. I planted them whole on a level surface, about 3 inches deep, 15 inches apart each way, and then covered them with dead vines of the Lima beans, garden-flags cut green for the purpose, and lastly, dead grass scraped from the garden walks—the whole forming a cover about 5 or 6 inches thick. This remained undisturbed, until the potatoes were taken up. The spot of land measured only 24 square yards, and produced 2½ bushels of very fine roots, which is at the rate of 504⅓ bushels per acre. It was an old strawberry-bed, so thickly matted with green-sward that I had it spaded up last fall; and this spring, just before planting, I scattered over it about a bushel and a half of the scrapings from a lime-kiln of shells burnt on the ground, which scrapings were chopped in previous to planting the potatoes. I think I may safely affirm that the produce would have been greater, but for five garden trees. One of these grew at each end of the bed, and the other three to the west, distant from it only the breadth of a garden-walk about five feet wide. This is the third trial I have made of raising Irish potatoes in this way, and it has convinced me that it is by far the best method, both for saving land and labor, at the same time that the potatoes are certainly of equal, if not superior quality, and exceeding in quantity any other mode yet tried among us. To these advantages we must add, that it greatly improves the soil, and prepares it finely for any other crop.

I have again tried the sugar-beet, but shall not make much more than half a crop. This failure has proceeded from two causes. A severe drought in September and October was one cause; and the almost entire destruction of the leaves in September, by some insect which I could not discover, was the other. They took, however, a second growth, which saved the roots from destruction. But if a late writer in the Albany Cultivator may be credited, this crop is worth little or nothing; for he asserts that he fed away last winter and spring, some fifty-odd ton to hogs and cattle, without perceiving any benefit, except some increase of milk in his cows. It is true, that there are, I believe, some hundreds of well authenticated experiments, accompanied by results very minutely detailed, of most manifest benefits from the use of the sugar-beet, in feeding both cows and hogs; so that we may venture, without at all impugning this gentleman's veracity, at least to pay very little regard to his solitary authority, until more gainsayers may join him. We may, I think, go a little farther, and suspect him of belonging to that class of

farmers whose eyes can rarely see any thing which operates against their preconceived opinions.

With respect, however, to root crops in general, it is evident that none of us, especially in Virginia, have yet bestowed on them that attention which they well deserve. Still less have we ever made any such trials between the different kinds, as would enable us to determine certainly which should be preferred. Hence, opinions vary almost beyond computation, and, what is very remarkable, the two roots which most farming books pronounce to be the best, I mean carrots and parsnips, we very seldom cultivate at all, except for table use. Nothing but a long course of trials, often repeated, and accurately made, can ever settle this much mooted question; and such a course, I fear that very few of us will ever take the trouble to pursue, however desirable it may be. But until we do, we surely ought to abstain, most carefully, from dogmatizing on the subject—not only because it will be discreditable to ourselves, but injurious to our cause.

Another of my experiments which I deem worth stating, was with a mixture of clover, orchard grass, and timothy seed, sown and rolled immediately after wheat, which was put in about the middle of October, 1839, with the large 2 horse-harrow. The ground was an old clover-lot that had been well ploughed about a month before. But a small portion of the clover-seed was clean, the rest having been cut when ripe, was thrown into small cocks, and suffered to remain on the ground, until just before it was sown. It was then trodden out, and after the stems were taken out, was immediately committed to the earth. The unclean seed came up much better than the clean, but did not show well, until the spring, when it soon appeared to have taken perfectly. After the wheat was taken off, it attained by midsummer, an average height of nearly 3 feet, The timothy and orchard grass seed both failed, probably from being defective. This experiment, which I have known to be successfully tried on several other farms in the middle states, justifies the conclusion, that to clean clover seed is a needless trouble and expense, and that in our climate, unclean seed sown upon wheat in October, will very rarely, if ever fail to come up well, whereas, clean seed, sown as usual, on wheat in the spring, without harrowing, will almost certainly perish. With me, it has done so, I think at least 5 times out of 6. Another great advantage in fall sowing is, that you may cut your clover, at least 7 or 8 months sooner, than if you sow in the spring.

My experiment with ruta baga was made by sowing the seed on the same ground which produced them last year. It was first well manured from the horse stables and cow yard. I was induced to make this trial by having heard from several persons of unquestionable veracity, that they had known many old planters successfully to pursue this practice with the common varieties of turnip, for a number of years in succession. The reason they assigned was, that this method always secured the turnips from the fly, and without any diminution of the crop, if the ground was manured each time of sowing. Whether this be true or not, certain it is, that no fly has molested my present crop of ruta baga, and that it promises to be quite as good as that of the last year, making due allowance for the excessive drought, during a part of the two last months. If the old planters referred to, were right in their opinions, as to the effects of their practice, it forms another striking exception to the alleged necessity of the constant rotation of crops, (beneficial as I admit it to be generally,) in preserving the productiveness of our lands, whilst this practice goes far towards disproving the correctness of the opinion maintained by the celebrated botanist, M. Candolle, and a few others, that every plant when ripe, deposites in the earth, some substance which is poisonous to plants of the same kind. True it is, that lands are said to "*get sick*" of the same crop, (clover, for instance,) often repeated, although I have known this repetition to be made of several different crops, for many, many years together, without any apparent injury whatever. But surely, even if we admit the sickness to the fullest extent, we may easily account for it, without the agency of poison—simply by supposing that the diminution of the crop arises solely from the lessening of its appropriate food, and must necessarily continue until *that* food is restored in proper quantities, by the application of some of those fertilizing substances which contain it. To look farther than this for an explanation of so common an occurrence as the impoverishment of our lands, seems to me to be taking a very needless flight into the boundless regions of fanciful theory and visionary speculation—a practice, by the way, which has excited stronger prejudices among the illiterate, against agricultural works in general, than all other things put together.

Before I conclude the subject of experiments, I will here call your attention to one which I stated two or three years ago. It was made with Guinea grass which I neglected after two trials, from a belief that it could not be here acclimated. In this I find myself mistaken; for a small spot which was not destroyed, has increased so much as to become a thick mat of grass that reached this year a height of at least five feet, in land by no means rich, and ripened its seed. I can now certainly say of it, that you may cut it four, and in good seasons five times, that in good land each cutting will be about three feet high, and that it stands drought better than any other grass I have ever tried. It is best propagated by the roots, which should be cut into pieces two or three inches long, and planted about three inches deep, in rows 15 inches by eight or nine apart. The ground requires cultivation the first year. I cannot say to what kind of soil it is best adapted, having tried it only in high land, the soil of which is rather light. * * * * * * *

THRASHING MACHINES.

To the Editor of the Farmers' Register.

Halifax, N. C. Jan. 8th, 1841.

Having sown a large crop of wheat, and intending to put a full crop of cotton and corn in the ground this spring, it is of course a great object with me to save all the *manual* labor possible. I should be glad, therefore, if you will give your readers, through the medium of your valuable journal, all the information you can as to the advisability of purchasing any of the newly invented reaping and thrashing machines; and would be glad also, if convenient, that you would mention their cost, and where they can be best procured.

I have just received one of Barnum's machines for heating water, and, so far as I have tried it, think it better suited to the laundress than the farmer.

[We cannot yet recommend the new reaping machine, (Hussey's ;) because we have not yet seen a trial of it; and those who have tried it differ as to its merit and economy. As to thrashing machines, our correspondent, and every man who makes even as much as 500 bushels of small grain, ought to have one. We cannot pronounce as to the best; but we lately chose and bought one of Jabez Parker, Richmond, with his horse power annexed, for four horses, for our own use, which was put up complete for $236. We are well satisfied with it.—Ed. F. R.]

PROPAGATION OF THE ROSE.

Erom the Southern Cultivator.

There are reckoned by botanists about fifty species of the rose, and from twelve to fifteen hundred varieties. Many of the most choice kinds that I have seen are hardy shrubs, capable of withstanding our winter weather in the open garden, and, as before observed, bearing buds and flowers from April to November. Any of these may be propagated either by layers or cuttings, or by budding, and may be re-produced from the seed. If you desire to propagate by layers, (which is one of the surest methods,) in the month of April or May, or even later, bend to the earth a small branch or shoot of last year's growth, and bury it three or four inches beneath the surface, leaving its extreme end out of the ground, and the other end in connection with the bush; it is also necssary to place a flat rock, or other weight, over the part which is under the ground, to prevent it from rising up, and also to retain the moisture about it. If the weather is dry, it may be watered with advantage. The layer will take root in a few weeks, when it may be separated from the parent stem. In the month of October or in the early part of November, it may be transplanted into any rich soil where it will maintain an independent existence. Sometimes it is very difficult to get a layer to take root; when this is the case you will be very apt to succeed by cutting the layer half in two and splitting it up about an inch and introducing a small wedge, and then proceeding as above directed.

To propagate by cuttings, choose a slip of recent growth, from five to eight inches in length. If the buds at the base of the *petiole* or common stalk of the leaflets is well developed, the slip is sufficiently old; otherwise, it is too young. The ends of this cutting may be either transverse or oblique, and may be planted in any month of the year while the sap is up, or in the month of November. I usually prefer the month of April, August or September, and place two-thirds of the cutting in an oblique direction beneath the surface, leaving above only one or two inches, or one or two buds; if the cutting is planted early in the spring it will take root and blossom the following summer. Damp, cloudy weather is most favorable for planting, and the cuttings should be shaded until they take root. The smallest cuttings are sometimes the best, especially in the months of June, July, and Augnst. Those at the extremity of which the rose has first dropped its petals are generally to be preferred, and when the buds above alluded to are full and well-formed, will generally succeed with more certainty than those of a larger size. These cuttings need not exceed more than four inches in length, or contain more than three buds. In planting it is sufficient to leave only one bud above ground. They should be well watered, and in very hot or dry weather the moisture may be retained about them by inverting a glass over them during the day.

The process of budding is also a favorite and speedy mode of propagating the rose, but may be readily seen by consulting any of the works on gardening, as also the manner of sowing seed, to which source I must refer the reader.

CONVENTION OF TOBACCO PLANTERS.

Hon. Daniel Jenifer, from the committee of thirteen members appointed yesterday to consider and recommend as may be deemed most expedient to be adopted by this convention, made the following report.

Mr. Jenifer, from the committee appointed by the President to consider and recommend such measures as may be most expedient to be adopted to accomplish the objects of this convention, reported that the limited time allowed them has compelled the committee to confine their report to a general review of the subject.

That since the adjournment of the tobacco convention which met in this city on the 1st, of May last, there has been no change in the burdens and restrictions imposed upon the tobacco trade of the United States by the nations of Europe, except in some unimportant matters by one or two kingdoms; and the facts stated by the committee in their report to that convention are now referred to, and by us reasserted, and their arguments and suggestions adopted. Since the publication of the documents by Congress at their last session, no correspondence has been received at the department of state on this subject, except a few unimportant communications from Sardinia and Belgium. No change has taken place with foreign governments in regard to this staple, and from what has already transpired, we have no hopes of a favorable action on their part until the Congress of the United States shall adopt measures commensurate with the object.

Great Britain still continues her excessive duty of seventy-two dollars and seventy-five cents per hundred pounds, or eight hundred per cent. on the prime cost of this article of our produce, while we continue to receive the product of the labor of her citizens at an average duty of twelve and a half per cent.

France yet continues her still more odious monopoly or *regie*, retaining in the hands of her king, or those to whom he sells the privilege, the sole right to import, manufacture, and sell American tobacco in that kingdom, by which the quantity of American tobacco consumed in France has been reduced to six or seven thousand hogs-

heads per annum, from which she derives a revenue of ten millions of dollars.

Russia, Spain, Portugal, and some of the minor powers of Europe adhere to their various monopolies under different names, but all tending to the manifest oppression of this our staple. And the Germanic powers included in the *zoll varien* or commercial union of Germany, have not reduced any portion of their transit duties or abated in the slightest degree their commercial system in which tobacco is the article most heavily taxed, as it is indeed in every nation in Europe, except Holland and Belgium. They have met us in that spirit of equality and justice which should ever exist between nations having friendly commercial relations; who have a right to insist upon and never should be satisfied without a free exchange of commerce on equal and reciprocal footing.

Treaties with several of the European governments expire in a few years, and a just regard to the planting interest requires that they should not be renewed unless the odious burdens and restrictions imposed upon the staple of tobacco be modified.

The treaty with the Hanseatic Towns of Lubec, Bremen and Hamburg, expired by limitation in December, 1839, but continues in force until twelve months' notice shall have been given of the intention to terminate it, and a fair opportunity now presents itself to our government to do us justice with these powers.

The American Ministers at the Court of Great Britain have for many years urged, with great ability, on that government, the propriety of diminishing the duty on tobacco, as a matter of justice to the United States on general principles of policy and free trade between two friendly nations; and we have shown by arguments which we think it would be difficult to answer, that, even as a measure of revenue, these excessive duties on this article, to a great extent, defeat their own object. But arguments have proved unavailing, and Great Britain continues her duty of 72¾ cents per pound on this product of our labor.

With equal ability our Ministers to France, commencing with Mr. Jefferson, in 1783, and continued down to the present time by Gen Cass, have remonstrated against the French system of monopoly as injurious to the American tobacco growing interest, and unjust by its departure from that reciprocity and equality which the French nation had insisted upon with some sternness, in their communications with our Minister in 1785, in all their commercial intercourse with the United States. Their remonstrances have met no other response than an act of the French chambers extending the law creating the monopoly of American tobacco to the year 1852.

By negotiation, therefore, nothing can be expected from her. The last ray of hope from that source has expired, and the American Tobacco planters must look to that tribunal which can alone afford them relief for the evils they endure —to the Senate and House of Representatives of the United States in congress assembled, we their constituents must appeal for a redress of the grievances herein set forth. And we rejoice that this appeal has been most ably seconded from other sources in various states in the union.

Amongst our agents abroad communications from Mr. Dodge and Mr. Miles have been repeatedly received by our government, which evince great zeal and labor in the different spheres in which they have acted.

We have seen with pleasure a resolution introduced into the Senate of Georgia to instruct their senators, and request their representatives to use their best efforts to have a law passed by congress to tax all French wines, silks and brandies, in proportion to the duty which they lay upon our tobacco in their ports. The governor of Virginia has called the attention of the legislature of that state to the subject in his message to them at their present session, and submitted whether it is not expedient, through their representation in congress, to enforce the just claims of their tobacco planters to a reduction of the enormous duties imposed on tobacco by most European governments.

And as early as January, 1837, the legislature of Maryland unanimously passed the following resolution:

Resolved, That the senators and representatives of this state in the congress of the United States be requested to take under their especial care this highly important and much neglected interest, and that they be particularly requested to oppose all and every adjustment of the present tariff, without obtaining for the tobacco interest a fair and equal participation in the benefits to be derived from such adjustment."

In conclusion, your committee recommend to the convention the adoption of the following resolutions:

1st, *Resolved*, That the only effectual remedy for the evils the tobacco interest labors under from the high duties imposed by Great Britain, and the monopolies of France and other nations of Europe, is to be found in the action of congress, by countervailing duties: and that the convention relies on the wisdom of congress in discriminating between those governments which *have* and those which *have not* manifested a disposition to abandon or modify their present oppressive duties and restrictions imposed on tobacco from the United States.

2d. *Resolved*, That it be recommended to the government of the United States that the treaties now in existence with foreign countries which contain no stipulations for reciprocity in duties on their respective products be not renewed.

3d, *Resolved* That the governors of the several states of the union engaged in the cultivation of tobacco, be earnestly requested to call the attention of the several legislatures of their respective states to this subject of the American tobacco trade with foreign nations.

4th. *Resolved*, That a copy of the proceedings of this convention be laid before the Senate and House of Representatives of the United States, and that the senators and representatives from tobacco-growing states be earnestly requested to take such speedy and efficient means as in their judgment may be best calculated to accomplish the object contemplated by this convention.

The report and accompanying resolutions having been read—

The convention was addressed at great length by Hon. Philip Triplett and Hon. Jos. R. Underwood, of Kentucky; Geo. H. Steuart, Esq. of Baltimore; Hon. Jas. Garland, of Virginia; Walter Bowie, Esq. and Hon. Daniel Jenifer, of

Maryland; Hon. Walter Coles of Virginia; Hon. Wm. D. Merrick, of Maryland; Hon. John Jameson, of Missouri; and Thomas F. Bowie, Esq. of Maryland.

After which, the report and resolutions were adopted.

From the Richmond Whig.

THE EUROPEAN DUTIES ON TOBACCO. OPINIONS ON THE OTHER SIDE OF THE QUESTION.

[We have at several different times published articles in opposition to the European system of high duties on this important product of Virginia. We shall now present a piece taking opposite views of the question.—Ed. F. R.]

I see from the papers, that much interest seems to be felt by the tobacco growers in Virginia (I shall confine my remarks to the interest of the Virginia planters) on the subject of high duties charged on the article of tobacco, by some of the European governments, and particularly by Great Britain where our finest and highest priced tobaccoes are used; and France and Italy, where it is a government monopoly, and where our next *best and highest priced* tobaccoes are used. The impression seems to prevail with the planters, and, probably, the politicians of our state, that if the duty on tobacco was reduced, or done away entirely in those countries, that the demand for the article grown in Virginia would be greatly increased, and that prices would thereby be higher, thereby greatly benefiting the planter and increasing the wealth of Virginia. Now, I believe this opinion to be erroneous, and that some few facts are worth a thousand theories, and may satisfy many that, in some things, free trade is not always the best for every body. In the first place, Virginia only raises about one-third of the tobacco made in the United States, and nearly one-half of it is manufactured at home, and the labor put upon it doubles the value—a good deal of which is exported in the manufactured state with the increased value, and is of a quality to command a preference, and in consequence of the high duties paid in the European markets named, particularly England, completely excludes them from competing with us in all the lesser markets in the world where the articles used are admitted at moderate duties or free. Again—tobacco is raised in Hungary and France and many other places in Europe and South America and the W. Indies, and very near, if not quite as much tobacco is raised in Europe and European possessions, as there is in the United States. Do our planters know this fact? Tobacco can be raised in Ireland to a great extent, and even in parts of Russia. Why has not more been raised in Europe, especially in Ireland, France and Holland? Simply because theirs is an inferior article to ours, and as such, could not pay the high duty that ours can bear. But look at Holland and Germany, where the duty is very inconsiderable, almost nothing, and you find tobacco so low in price, that these markets are worth nothing to the Virginia planter, except merely to take off some 5,000 or 10,000 hogsheads of lugs and inferior leaf, annually, at $3½ to $4½ and $5. And why is this? Because they use tobacco principally for smoking, and an inferior, cheap article will do; and, as there is little or no duty, the moment prices get above $3½ to $5, they resort to the use of their own growth—but at $3½ to $4 to $5, they give the preference to American tobacco. Suppose the trade in Great Britain, France and Italy, placed upon the same footing of Holland and Germany, is it not reasonable to believe that all Europe, where tobacco can be raised, will raise it?—for labor is cheaper there than here. The consequence would be, more tobacco would be raised and more would be consumed; but the growers in Virginia would have to take what they could raise it for in Europe; for we must bear this fact in mind, that in Europe, (except in great Britain) they do not chew tobacco—they smoke and snuff. The Virginia tobacco is used principally for chewing and mixing with other tobaccoes to make snuff; very little of it is used in smoking, and yet much the larger portion of tobacco used in the world, I presume, is consumed by smoking. There is now, and has been for years past, a demand for Virginia tobacco beyond her ability to raise it, and at prices paying the cultivator of the soil better than any thing else. Let the planters, then, raise more if they can, and when the product becomes so great that they find it necessary to increase the consumption, and they are willing to compete with the European growers, by selling their crops at $3 to $4, and $5 to $6 per 100 lbs,—then, indeed, it may be well to seek to have the duty taken off. But it does seem to me, that unless we can get foreign governments to take the duty off of all American tobacco, and to prohibit the cultivation of it by their own subjects, and to keep the duty on all tobacco raised in Europe, we have no right to complain, but should be well satisfied to find our better article protected by a duty so high as almost to exclude their inferior article, raised at home, and which, if used to any great extent, must reduce the value of ours. It is not the interest of our planters to cultivate double the quantity of ground, and exhaust their lands to make a large quantity of inferior tobacco, to sell at $3 to $5; they had much better cultivate half the quantity of land, make good tobacco, and get for it $4 to $10, as they now do. Those, gentlemen, are my views on this subject, hastily sketched no doubt erroneous some particulars—but in the general, I believe to be correct. My only object in presenting them is to benefit the tobacco growing interest and the trade of Virginia.

ANSWERS TO INQUIRIES RESPECTING THE MANURING AND ROTATION OF CROPS OF WORCESTER.

To the Editor of the Farmers' Register.

Westover, January 13th, 1841.

As I am now housed from incessant rains, enough almost to produce a flood, I have been looking back over the numbers of the 'Register' for the last year; and find in the August number a communication with the signature 'R.,' asking of me information with regard to the application of my manure, under the change of system from the four to the five-field. I owe the author of the piece an apology for my remissness in not paying that attention to his wishes that he so much deserved at my hands; and now thank him for the

flattering manner in which he there speaks of my adopted five-field rotation.

In the communication I wrote, assigning my reasons for a contemplated change of system, from the four to the five, and published in your January number, (1840,) (and which by the way you did me great injustice, in the many typographical errors therein committed, enough to discourage another attempt almost in your columns,) I used the the following very imperfect manner of expressing myself with regard to the mode of preparing the soil by manuring, for receiving the oat crop, &c.; although I think it might be inferred otherwise. The passage I used was this: "As the oat crop is so valuable a one with me for feeding my teams, I propose seeding one third of the field intended for peas in that crop; and on which I propose to put my manure. Should the manuring extend farther than the third for oats, I propose putting the remainder of the manured land in pumpkins, and the balance of the field of course in peas, &c."

In the paragraph here referred to, and about which the author of 'R.' asks information, I did not probably express myself as understandingly as I should have done; I will therefore give the mode I contemplate improving the field intended for the oat crop. My habit and preference have been to manure as much land as I could for corn. The portion of the field to be manured for corn is allotted off, and not manured until after I have planted the rest of my corn crop, allowing the manure to remain in its compact state in the pens, to be trampled and dunged by the stock, as long as possible in the spring before it is broken, that it may become the better fermented. So soon as we have planted all of the field not intended to be manured for corn, which is not done before the 10th or 15th of April, and sometimes later, we turn in every thing to getting out all the manure we can in the portion of the field allotted to be manured, and for corn also; which is usually about one-third of the field. It is this portion of the field manured for corn that I propose seeding in oats the following spring—and not manured the same spring for the oat crop, as was inferred by 'R.' The manure made during the summer, fall, and winter, from the stables, hog-pens, &c., can be used for the oat crop alone, if preferred; as those manures might be in a state to be used. But the idea of using coarse, unfermented farm-pen manure, as early as would be required for the oat crop, never entered my head. And 'R.' is right enough in the opinion, that the manure of this winter would be in too crude and unfermented a state to be used for the oat crop of this spring; for my impression is that oats should be sown as early as the last of February with us; which would of course be too early to break the winter-farm pens of manure.

I prefer using the coarse manure in the foregoing manner for corn, to any other use to which we can apply it; because the corn crop is more benefited by it in its coarse state, probably, than any other crop. The succeeding spring it will constitute a fine pabulum for the oat crop to feed from. Benefiting the succeeding wheat crop essentially, and, I think, ensuring a clover crop, to resuscitate the land. By such a process we derive all the benefits that could possibly be expected from it, viz.: three grain crops and a stand of clover.

My mode of manuring, however, has been very various of late, and probably not used as judiciously as it might have been. I have been governed by circumstances. Portions of my estate I found in good condition, while other portions were very much exhausted. My object has been to equalize its fertility as much as possible. To accomplish this object, I have been obliged to use my manure irregularly, and at times not the most desirable, or possibly with considerable loss. As soon as I can equalize the fertility of my fields, (which I hope soon to do,) I shall fully carry out the mode of manuring for the corn crop above recommended as the most judicious and preferable. I do not consider it so important as some do that the manure should be handled and prepared into a compost, with so much expense and trouble before its application. I think the great object should be to make as much as possible, and to give it to the earth, almost in any state, whenever you can. You will be sure to derive its benefits sooner or later. All the manure I make is certainly carried out twice a year, spring and fall, and sometimes oftener.

I have practised, I think, to great advantage, top-dressing my clover, early in the spring, with wheat straw. All the straw that cannot be carried through the pens in time to be sufficiently fermented is used in this way. And if a dry season, the benefit to the clover is very great. I have manured, by top-dressing wheat, but never to any advantage to the wheat crop. I have almost invariably lost it by the Hessian fly or bug.

Hoping that what I have written may prove satisfactory to my kind friend 'R.,' I remain, your friend and obedient servant,

JOHN A. SELDEN.

CRUSHED CORN-MEAL—WINTERING HOGS, &c.

For the Farmers' Register.

Indebted to the Farmers' Register for many valuable facts and suggestions, in relation to agricultural operations, I feel myself bound to endeavor to discharge the obligation I have thus incurred, by communicating, from time to time, for the benefit of your correspondents and readers, brief notes of such improvements in the prevailing modes of management in rural economy, as I can recommend to the adoption of my brother farmers, upon the authority of my personal experience and observation. A few words at present as to the best mode of wintering hogs.

My stock consists of two large breeding sows, far advanced in pregnancy. I design their pigs for pork next winter, and eleven shoats, eight about five and three about seven months old; all pronounced by my neighbors very fine animals. The pigs are confined in a pen of good size, so situated that they can bask at pleasure in the sunshine, and provided with a warm and dry sleeping apartment, separated from the body of the pen by a close wall of rails, about two and a half feet high, with a hole at one end for ingress and egress, and covered with a sloping roof of plank overlapping each other. The pen is not floored, but is kept sufficiently dry by an abundant supply of shucks, corn stalks, and refuse straw, out of which my pigs are industriously manufacturing several loads of excellent manure. My breeding sows run at large, because I have not found it convenient as yet to build a pen for them; but they find a warm bed in my stable, and rarely wander far

from my premises. I feed my hogs regularly twice a day, morning and evening. I would greatly prefer feeding young hogs three times a day, if I could do it with any sort of convenience, with slop made by boiling meal made of corn crushed in the ear, and ground corn and cob together. I find, by repeated experiments, that one gallon of crushed corn-meal, *well boiled*, will, when cooled, make about five gallons of thick mush. This mush I mix, in feeding, with about an equal quantity of hot water, frequently throwing into the pail a double handfull of bran, stirring it well, and give it to my pigs warm. I put a handfull of salt into the pot about three times a week, and occasionally a shovel full of ashes. With this allowance, my hogs are in fine order, in much better condition than any of my neighbors', and some of them are fat enough for the knife. I boil my meal at convenient times in a pot holding about five gallons. I prefer letting the water boil before the meal is stirred in. The meal is thoroughly mixed with the water by means of a flat paddle, and is suffered to boil violently for half an hour or more. I would prefer a cheap boiling apparatus, but having just commenced farming I have not yet found time to build a furnace. I shall be prepared, however, by next winter, to fatten my hogs on boiled roots and crushed corn meal.

With a large kettle, and a barrel to hold the mush, many gallons might be prepared daily in every kitchen, by the servants, after the meals are cooked, and especially at night by the large roaring fires which the negroes will keep to warm themselves by. I know no way, except, perhaps, by feeding on roots, in which hogs can be so well kept through the winter at so little expense. My stock of thirteen, for instance, consume only a peck of crushed corn meal, equal to a single gallon of corn, a day. This, at the rate at which corn is selling in my neighborhood, 37½ cents a bushel, is only one-third of a cent a day for each hog. The manure will more than pay for the extra trouble and expense of preparing the food.

This strikes me, on reflection, as even a cheaper mode of sustaining hogs through the winter than by feeding them with potatoes or sugar beet or mangel wurtsel. A peck of potatoes, the usual daily allowance to each hog, would be 6¼ cents a day, at the price at which potatoes are selling in my neighborhood; and, supposing that 500 bushels of sugar beet are equal in product to 40 bushels of corn to the acre, then, if each hog be allowed a peck of sugar beet daily, the 40 bushels of corn ground up, cob and corn together, and boiled into good slop, will, upon the principles of calculation furnished by my experiment, go more than twice as far as the 500 bushels of sugar beet. As to whole corn, it is evident that four times the quantity I consumed in slop, that is, a peck daily, would hardly keep thirteen hogs in living order. My corn is crushed at a neighboring mill, where I haul it by the wagon load, and take away the meal when I want it. For crushing and grinding I pay a toll of one-tenth.

A neighbor of mine, a large iron manufacturer, feeds his mules on crushed corn-meal mixed with cut straw, and though they work hard every day they are as fat as it is desirable to have them. Crushed corn-meal, at from 15 to 25 cents a bushel, according to the price of corn, is, it seems to me, the cheapest horse-feed that can be used. It is certainly cheaper than oats, or rye, or whole corn. The farmers in this neighborhood are beginning to use it quite extensively. It is much healthier than whole corn, as well as cheaper.

A neighbor informs me that he fattened an old cow last fall on crushed corn-meal, that she fattened remarkably fast, made first-rate beef, and yielded an enormous quantity of tallow for a cow of her size.

I feed my milch cow twice a day with half a gallon of crushed corn-meal boiled in about four gallons of water; and I would not want better slop for a milch cow.

Crushed corn-meal being so valuable for feeding all kinds of stock, every mill, and every planter and farmer having a horse-power, either for a cotton gin or a thrashing machine, ought to be provided with a corn crusher. While he would thus promote his individual interest, the country would save millions of dollars annually. I observed, in a late Cultivator, a notice of a machine called "*the Virginia corn crusher*," which, after five years' trial, is represented by the manufacturer, Robert Sinclair, jun., of Baltimore, as an efficient and durable machine, not liable to get out of order, and crushing twenty bushels of corn per hour with one horse, fine enough for feeding any kind of stock. Mr. S. says he has sold a number of them, and that they have given universal satisfaction. If the machine is as valuable as it is represented to be, a tolerably large farmer would save the price of one ($65) in a single year. Two or more neighbors might club together and purchase one, or several farmers might establish a machine at some mill in their neighborhood. The toll would soon pay for the machine.

While I am writing I would just caution your readers against throwing hog or beef *lights* to hogs; one of my neighbors having just lost two valuable sows by the carelessness of his negroes in this particular. The lights choke the hogs.

PLOUGHBOY.

Rockbridge, Va., Dec. 28, 1840.

CONVENTION OF COTTON PLANTERS IN ALABAMA.

For the Farmers' Register.

On Monday, the 7th instant, agreeably to public notice, a meeting was held at Greensboro', by a number of the planters of Greene, Marengo and Perry counties, for the purpose of ascertaining the extent of the present cotton crop in Greene and the adjoining counties.

The meeting was organized by calling Col. William Armstead to the chair, and appointing Isaac Croom, esq., secretary.

On motion of Dr. R. C. Randolph,

Resolved, That the chairman appoint a committee of twenty-four, to report to an adjourned meeting, to be held at Greensboro', on Monday the 14th inst.

Pursuant to the foregoing resolution, the chairman appointed the following gentlemen to compose said committee, viz.: Dr. R. C. Randolph, Rev. Wm. W. Hill, Thomas M. Scott, esq., Wm. F. Bentley, esq., Dr. Jno. R. Witherspoon, Thomas H. Herndon, esq., Rev. J. E. Sawyer, Wiley J. Croom, esq., Col. John Nelson, James McDonald, esq., Col. Harris Tinker, Col. Robert C. Macon, Dr. Wm. T. Herndon, Rev. Lemuel

D. Hatch, Wm. W. Britton, esq., and Theo. B. Randolph, esq., of Greene--James H. Ruffin, esq. Samuel S. Strudwick, esq., Col. Byrd M. Pearson, Andrew P. Calhoun, esq.,and Col. James Pickens, of Marengo--and Col. Richard B. Walthall, Jabez Curry, esq., and Q. T. C. De Yampert, esq., of Perry.

The convention then adjourned until Monday, the 14th instant, at 12 o'clock.

Greensboro', December 14, 1840.

The convention met according to adjournment.

The committee of twenty-four appointed at the previous meeting, through their chairman, Dr. R. C. Randolph, presented the following report and resolution, which were unanimously adopted.

The committee appointed by a former meeting to inquire into the reported deficiency of the present cotton crop, as contrasted with that of 1839, would state to the present meeting, that they have given the subject due consideration, and that they have visited neighborhoods and made inquiries of planters in Perry, Marengo and Greene counties, and submit the following facts and reflections.

The summer and autumn of 1839 were highly favorable for harvesting; notwithstanding which, the cotton crop in the three counties above mentioned was not generally gathered until the month of March, 1840. The summer and autumn of 1840 have not been so favorable. There has been more sickness, the cotton which suffered by the invasion of insects did not mature as early as in the previous year, rains have been much more frequent; and yet the crop is now nearly all gathered, and will, it is believed, be entirely so by the first of January. The aggregate production in 1839, of seventy-six plantations, was 17,008 bales; while the yield from the same plantations, in the present year, has not, and cannot exceed 8,261 bales.

The plantations from which these facts have been derived include every variety of soil found in these counties, from the rich lime lands to the poor sand hills. The falling off in the production is greater upon the lime land than the sandy ridge. Upon the former it is believed to be generally more than half, and upon the latter one-third. The large bulk of cotton produced in these counties is usually derived from the lime lands.

From these considerations, the committee are of the opinion that the aggregate production of the present year, in the counties of Perry, Marengo and Greene, has not amounted to more than half of the yield of the previous year. In conclusion, they ask leave to submit the accompanying resolution.

Resolved, That entertaining the belief, from the best information we have been able to collect, that the relative deficiency of the present cotton crop, throughout the whole cotton growing region, is fully equal to that in the section represented by the meeting, we earnestly invite the whole body of southern planters to hold similar meetings, that an early opinion, approximating very nearly to accuracy, may be found as to the entire crop of 1840, and fortified in such manner as to leave the matter beyond doubt or cavil.

On motion of Thomas M. Johnson, esq.,

Resolved, That the proceedings of this convention be published in the papers of the cities of Charleston and Mobile, and in those of the counties of Greene, Marengo and Perry.

The convention then adjourned *sine die*.

WM. ARMSTEAD, Chairman.

ISAAC CROOM, Sec'y.

A COMMON OBJECTION TO AGRICULTURAL PERIODICALS, AND ESPECIALLY CONSIDERED IN REGARD TO THE FARMERS' REGISTER.

The Farmers' Register, throughout its whole course, however scantily supported by subscriptions and by written contributions, has been at least most bountifully fed with compliments and praises; and if such pleasant, but unsubstantial food, were sufficient for its sustenance, growth, and utility, there would certainly be no ground to complain of neglect. We readily admit that the complimentary expressions which have in many cases been uttered to us, and of our work, have been more kind and more favorable than the actual state of things deserved; though certainly not more so than would have been deserved, if some solid aid, and especially that of written communications, had been bestowed, instead of praises given by those who gave nothing else. But the highest commendations have frequently been accompanied a species of censure of the work which was at least as much undeserved; and which was founded on mistake in part—and which so far as deserved at all, the censors themselves should be held responsible for, and not the editor, or his publication. The objection referred to has been often, to our knowledge, stated, and therefore we infer is generally understood to exist, by our brother farmers in agricultural regions remote, or under different circumstances, from lower Virginia, where the work has been published—and who also have not been its constant or frequent readers. Whilst (in most cases) allowing to it high, or even an undue degree of merit and usefulness for the circumstances of lower Virginia, it seems to be taken for granted that the subject matter exclusively relates to the peculiar culture and means for improvement of that region. The farmers of the west, and even of the mountains of our own state, say, "Of what use can the Farmers' Register be to us? We want to know about grass, and meadows and cattle." Many of the tobacco planters of the middle country say, "What use can we make of the Farmers' Register? We have no marl." Most of the planters of the great cotton region think that they have still better ground to object to the difference of the agricultural conditions of our respective regions. We speak not of any farmers north of "Mason's and Dixon's line;" for they nearly all hold every thing in and

about southern agriculture and agricultural opinions, in supreme contempt.

The same objections may be and probably are alleged against all other well known agricultural publications ia our country; but it is enough for us to speak in regard to our own.

In the first place, then, the charges are not correctly founded in point of fact. We admit, generally, and regret that it should be so, existing deficiencies of practical information on *every branch of agriculture*—deficiencies too which could be well and easily supplied by hundreds of different individuals among our subscribers and readers. And truth requires that this admission should extend to the culture and the improvements of our near neighbors, as well as to remote regions and other modes of culture. But we deny, and refer to the past publication for the proof, that the contents have been at all exclusive in regard to subjects, or that any one interest has been neglected, or kind of culture overlooked, if it was possible to obtain articles thereon to publish. The farmers of the Valley, and graziers of the more western mountains of Virginia, if they had examined, before charging a deficiency by guess, would have seen that marked attention has been given in this work to all their peculiar agricultural interests. Besides hundreds of minor articles, embracing every thing original that has been communicated, and all that is worthy of republication from other journals, there are the long articles, with numerous and beautiful and costly engravings, on the various breeds of cattle, and the entire works of Stephens and Johnstone on draining and irrigation. Both the latter new and expensive works we specially imported for the purpose of republication, when not a copy had before reached this country; and of these works alone, we would say that if a draining or grass and cattle farmer received no other benefit from our eight volumes, he would not be a loser on his out-lay.

In like manner, tobacco culture, and other branches of agriculture of the middle country, have been treated of by some of our correspondents in many extended and able articles in our early volumes. One alone of these pieces was said by one of our wealthy subscribers, would pay him for his cost of subscription for his life. But, nevertheless, (perhaps because he had got value enough) he discontinued his subscription at the end of that year. Articles on tobacco-culture have indeed been entirely wanting of late—because no more have been written for this work, and no other publication furnishes any on this subject. But, as this work has elicited and published *every* good original article on the subject of tobacco culture, that has appeared in the United States (so far as we know of) within the last eight years, it surely cannot be condemned, with any justice, because of their small number, compared to other more popular or inviting subjects.

In like manner, especial attention has been paid to the great subjects of cotton culture and cotton interests, in all their branches; and if the articles from, or peculiarly suited to, the cotton planting region, were put together, it would be found that they alone would constitute a considerable portion of our whole work.

So much for denial or apology. But there is another and more important aspect in which this subject should be viewed. Suppose that any of these charges of particular deficiencies were true to the fullest extent, while on other grounds the Farmers' Register had the general good reputation and extensive circulation which it has always enjoyed—we ask whose would be the fault, and and who else could easily furnish the remedy, but the very class who suffered by and would complain of that deficiency? Suppose, for example, that the subjects of grass, and grazing, and cattle, had in truth been as much neglected in this work as some persons have erroneously inferred—the only possible cause of the omission would be that the farmers engaged in and best informed on those departments had altogether failed to communicate any thing thereon for publication. No conductor of an agricultural journal can furnish much practical instruction from his own store of experience; no such promise was ever held out by us, and to have held it out would have been both presumptuous and manifestly deceptious. The great and all-important purpose of an agricultural journal is to serve as a common channel of inter-communication among all its readers—a receptacle and place of deposite of the views, information and experimental knowledge of all—and a source of diffusing, to all, the thus collected knowledge of every individual among thousands thus combined for the benefit of all. Considered merely in this humble and simple mode of working, and how great, how incalculably beneficial would be the improving and profitable results of an agricultural journal so conducted! Such was the main object for which ours was commenced, and, so far as depended on us, that object has always been most especially sought. Always desiring and inviting written communications, and especially of practical operations and results, we have never refused a place to so much as a single article of that character, presenting facts derived from practice and experience. If then, any particular branch of husbandry is not sufficiently treated of, it is entirely owing to the failure of those who possess some information thereon and desire to obtain more, to

present their separate contributions—the accumulation of all which would at once furnish a rich fund, and which, by inducing further experiments and continued communication, would grow more fruitful and profitable with the progress of the work. Thus if the members of any one interest only were so to avail themselves of the facilities offered to all by the Farmers' Register, it would, thereby be made more peculiarly *their own publication*; and, by embracing other subjects, would be even more valuable for that particular interest, than if all other agricultural subjects were jealously excluded. Thus it depends entirely on the members of any particular branch of agricultural pursuits, whether the Farmers' Register shall become, in effect, their own peculiar organ, and a perfect and rich source of information in regard to all that they most need to be instructed upon. And if the members of not only one, but of all the different branches of agricultural practice, were to do the same, there would be room for all in our broad pages, and each would be amply served and provided for, without lessening the fullest needed supply to all others. The corn, wheat and oat culture—tobacco culture—the new marling and clover husbandry—cattle, meadows and grazing—the great cotton culture of the south—rice culture—sugar culture—and each of all other departments would have ample scope, and receive as much attention, as if each one were the sole subject of consideration.

But if our view in this respect be deemed wrong, and the opposite, against which we have been contending, altogether correct, let us see to what result the latter will necessarily lead. If, as conveyed by the objections above stated, a particular agricultural region cannot be properly served by any journal unless it be published in, and exclusively belong to that region—then every such separate region or agricultural interest, should have its own separate and exclusive publication; or otherwise, that any other publication will much less ably and efficiently serve as an organ of communication and instruction. Upon this ground, there would be at least four separate agricultural publications (perhaps five or six) required for Virginia alone, which has not yet given support to one—and ten or twelve would be needed for the states between the Potomac and the southern limits of Georgia and Alabama. Now if so many papers were but to divide amongst them the present support, pecuniary and literary, given to the previously existing publications, all of them would soon starve, and die, for want of sufficient aliment of both kinds. And even if continuing to live, and operate, each one, if aided only by its own region, would be so meager and uninteresting, that its lingering existence would be of little benefit to the public, or profit to its conductor.

Should so desirable and valuable a result ever be produced in the southern states as that the subscribers, readers, and writers for agricultural journals should be increased ten or twenty fold, then there will be advantage in increasing greatly the number of such publications. But until that most beneficial state of things be somewhat approached, or appear in distant prospect, it will be far better from the interest of all parties concerned, the payers for and readers, as well as the publishers and sellers of publications, and certainly better for the great object of collecting and diffusing agricultural knowledge, that two or three journals shall be supported well, and supplied abundantly with matter, than that a dozen should linger on upon barely enough sustenance to save them from extinction.

SKETCHES OF WESTERN NEW YORK.

To the Editor of the Farmers' Register.

Greatfield, Cayuga Co., 10 *mo.* 12, 1840.

We have had no frost here yet, though there has been a little at Rochester; and, I understand a severe one further west of the Genesee river. This result, however, is to be considered merely incidental, for I am not aware that the western part of the state is more subject to early autumnal frosts than lands near the Cayuga lake. A cold column of the atmosphere, perhaps, fell on that part, imbibing the warmth of the earth, and reducing the temperature; or they may have had a clear sky with great radiation, while we were curtained in with clouds; or a breeze may have prevailed here, rolling down on the surface the warmer air from above, and counteracting by such mixture the effects of radiation.

The heath clingstone is now ripening; and as the evening is cool, and some danger from frost, we have been taking in a part by way of precaution. The southern* character of the peach is indicated by its extreme sensibility to frost; and also by its deficiency of flavor when it ripens in a cool atmosphere.

1 *mo.* 2, 1841.

The preceding paragraphs were written some months ago; but a series of unexpected events rendered it inconvenient to pursue the chain of thought that presented at that time; and I now resume it in the hope that some account of our district will not be unacceptable to the readers of the 'Farmers' Register.'

The principal defect of our climate is excessive

* It appears from Boyle's Illustrations that "the peach grows wild in different parts of the Himalayas," and that even *another species* of it is found in that region; but I have seen no evidence whatever to show that it is a native of Persia, as its specific name (*A. persica*) would imply. This may serve to explain the remarkable circumstance that the peach is not mentioned in the Bible.

moisture, with that depression of temperature that so often accompanies showery weather. Droughts, indeed, sometimes occur; but generally our driest summers are the most productive. This result in great part, however, has been ascribed to the liberal supply of lime in our soil—not the carbonate, as we might have called it, if the 'Essay on Calcareous Manures' had not taught us better.

But an extract from 'Davy's Agricultural Chemistry' may render my meaning plainer: "The sandstone and limestone hills in Derbyshire and North Wales may be *easily distinguished at a distance* in summer by the different tints of vegetation. The grass on the *sandstone* hills usually appears *brown and burnt up;* that on the *limestone* hills, *flourishing and green.*"

Our state geologists have considered this district as belonging to the transition class; and the rock that occurs in place in this vicinity is Professor H. D. Rogers' Formation VIII., which extends so widely over the United States. It is in this rock that all our parallel lakes, from the Otisco to lake Erie, are situated.

When disintegrated it forms rather an inferior soil; but the soil and subsoil of this neighborhood have been swept from the limestone formation that crops out to the north of us; and thus the land has been ready limed to our hands by a convulsion of nature. In many places, however, addition would be found useful and profitable for the farmer.

This soft and crumbling slate appears to have been deeply and irregularly channeled previous to the deposition of the diluvial formation. This is evident from the wells which are dug. The slate itself, so far as I have been able to observe, yields no water; and all that the wells receive, is collected above the solid rock. In some places, the rock is near to the surface; and the only advantage of cutting into it is to make a reservoir. In other places it is at unknown depths, covered up by diluvium; and then a permanent supply of water may be obtained. Two wells within half a mile of this spot, are nearly fifty feet deep, without touching the rock, and the water is abundant.

On account of the smoothness of the surface, as well as the impenetrable nature of this rock to water, very few springs break forth in this neighborhood; and the prospect of forming Artesian wells is decidedly unfavorable.

The surface of the country in general is so smooth that travellers in passing from the village of Aurora, eastward four miles, to Poplar ridge, are seldom aware of the height they have gained. One gentleman thought the land was too level to be salubrious, and estimated the elevation of that ridge above the lake at one hundred and twenty feet; yet it is known to be six hundred and seventy by an actual admeasurement made at my request.

The general dip of the rocky strata is to the south. In the disturbances which happened when the basins of our lakes were cleared out, the slate, from its softness, suffered much more than the limestone, so that the latter rock appears to have regulated the depth of those basins, and now underlays them. The lower end of the Cayuga lake extends about six miles through a limestone district, in which the water is probably not more than thirty feet deep. The comparative shallowness of Lake Erie is also ascribed to the same limestone formation, but Lake Ontario was formed in the red shale that underlays the limestone.

In sailing up the Cayuga lake, however, as soon as we pass the limestone, and the slate appears on the shore, it deepens rapidly, so that the eye in calm sunshine is no longer able to discern the bottom. Opposite to Aurora, the greatest depth was found to be two hundred and eighty-two feet; but I have no doubt of its being much deeper further up the lake. At Aurora the width is more than three miles.

It is rather rarely that the lake freezes over at this place, although we have known several instances of the kind—only once, however, when the ice was strong enough for persons to pass over to the opposite shore. It is well known that shallow water freezes over much sooner than deep water; and this remark applies to all our lakes. The shallow part of the Cayuga lake is frozen over every winter.

This lake appears to have once extended ten miles further to the north, of variable width, encroached on by islands, and averaging perhaps nearly two miles. This tract is now one vast bed of marl of unknown depth. A kind of fresh water snail, (perhaps a *Lymnea,*) which may now inhabit the lake, as its shells are found on the shore, continued to increase till the exuviæ approached the surface of the water, and marsh plants began to grow. Other shells, however, probably form a part of this immense mass, which might supply a large portion of the district with marl for ages to come. The posts which support the Cayuga bridge—one mile up the lake and one mile in length across it,—were driven into this deposite, which is so pure that our first settlers used it for white washing.

I have mentioned that we are not indebted to the rock that underlays us for our soils, but to the country north. The flood that once swept over this land, came from that direction, and brought in its train, not only portions of all the rocky strata that crop out on this side of Lake Ontario, but many primitive rocks from the elevated lands beyond its northern shore in Upper Canada. Whether they *forded* or *navigated* that water, may be a question for the curious; but no doubt can exist of their arrival from that quarter. All the whole diluvial formation was southward in its course.

Most of these stones or rocks, which are scattered over all our fields, are rounded, though this is in some measure proportional to the distances they have travelled,—those of this district not more than a furlong or so, south of their old beds, retaining their angles.

The difference in the size of these fragments, is sometimes very great. I estimated one piece of granite near Montezuma at 3000 cubic feet, and it appeared to rest on a bed of sand.

The course of this deluge was upan inclined plane, rising *over the highest hills*, and passing into the valley of the Susquehanna. That river at Owego is 410 feet higher than the Cayuga lake; and the *lowest opening* in the hills between them is 594 feet; yet fragments of our rocks have passed into Pennsylvania, though much worn and reduced in size. In early times, the gravel along the shores of that river was picked over, and limestone pebbles collected in sufficient quantities to burn into lime for domestic purposes. These were not found, however, more than twenty miles down

the river, as if they had become worn out by contrition on so long a journey.

Some parts of this district appear to have suffered a more violent diluvial action than other parts, though it is possible the evidences may be more owing to a greater quantity of loose materials in some places; which would be more obedient to its power. This latter suggestion finds some countenance in the circumstance that gravel hills occur in greater abundance south of Lake Ontario, than in any other part of western New York; and this tract extends to the distance of more than twenty miles from the shore. Such a lake is the place where we should expeet loose materials to collect.

The arrangement of these gravel hills presents the most curious phenomena. Their direction varies from the true meridian in some cases more than twenty degrees to the west of north; but those which I have examined in the neighborhood of Montezuma, diverge much less, and vary but little from the present magnetic meridian; of course they are nearly parallel; and I have not found any two adjoining ridges to differ more than two degrees. They point to a common centre at the north.

Perhaps I may be better understood if I briefly describe them. Some are more than half a mile long, almost as regular as an artificial embankment, and broad enough for public roads, which in some instances have been laid out along them; while others, indicating a more violent action, are shorter, composed in part of coarser materials, including rocks, and so narrow on the top as barely to admit of a foot-path. It seems evident that, when they were first formed, the edge must have been as sharp as the ridge of a roof—as sharp as loose materials could be made to stand.

Some of these ridges may be 100 feet high; an altitude from 40 to 70 feet however would include a great number. They add much to the picturesque beauty of the country; but little to the comfort of the farmer, as they divide his land in some places most inconveniently.

In three or four wells within half a mile of this place, branches of trees have been found at depths of more than thirty feet. The wood is sound, resembling red cedar, and I have preserved some of those specimens in my cabinet.

In the waters of the Cayuga, eels are numerous; and in autumn great quantities have been taken in baskets when descending the Seneca river. Only a part however migrate at that season. In winter, holes are cut in the ice which covers the lower part of the lake, and barrels of them have been annually caught with spears.

Ice is more rapidly formed on the lake when the water has been chilled by deep snows, or a long continuance of cold weather. Thus a severe night towards the close of winter, produces a much greater quantity of ice than a night of equal severity in the earlier part of the season.

When the thermometer is below zero, the lake smokes like a great caldron; and much latent heat is given off with these exhalations, softening the air to a considerable distance. In this way the climate of the lake country is milder than that of any other inland district within the same parallels of latitude east of the Rocky Mountains. The mercury at this place, so far as I have been able to learn, has never been so low as it has been *sometimes* at Philadelphia, Cincinnati, and Vincennes.

North-easters, always so uncomfortable and often so destructive in the maritime parts of the United States, are not felt in this district; and no wind sets in regularly from that quarter at any time. I remember, indeed, a brisk wind with snow for half an hour or so, but this was in unsettled weather, when light breezes were veering round from the north towards the east or south-east; and I have no recollection of any similar instance.

I have ascertained that at times when north-easters rage on the coast, we have at this place a light steady breeze, varying from N. N. W. to N. by E.—more frequently with rain or snow, though sometimes with a clear sky. It seems as if a portion of that *great under-current* came up the St. Lawrence, and then was deflected over this favored land,—for the breeze is so gentle that probably no person in health would think of postponing on its account a visit for either business or pleasure.

Northerly winds, as I have already mentioned, are not generally fair weather winds; and several of our deepest snows have come from that quarter. I have seen showers from that direction for two days in succession, which it appeared were exhausted, soon after passing into Pennsylvania, as a newspaper printed at Williamsport, on the west branch of the Susquehanna, a day or two after, noticed a continuance of the drought while we were saturated.

When the S. S. E. wind sets in, taking the direction of the upper part of the lake, not unfrequently a hazy cloud, the thin edge of the coming tempest, is seen at the same time in the S. W. just rising above the horizon; and from this it is evident that our south-south-easter is really a S. W. wind deflected from its course. In winter it is the most chilling wind that blows, flowing down from the mountains in the south; and sometimes it is 8 or 10 hours before it becomes sensibly warmer. If the storm approaches while the air is cold, we have snow; but if the wind has time to soften, we have rain, or snow melting as it falls. It is not uncommon for snow to fall from that quarter three or four inches deep, followed by a thaw, and succeeded by snow squalls from the west.

Sometimes the S. S. E. wind blows moderately for several days, especially in summer or the early part of autumn, without rain; but though often warm and pleasant, it is considered the precursor of a storm; and no settled weather is expected. In drought, however, whether of long or short duration, the wind generally comes *down* the lake in the morning, but *up* in the afternoon. It is a revolution without a cloud—an unsuccessful movement in the air to raise a storm.

Thunder clouds commonly approach from the S. W. but appear over the highlands south of the lake more frequently than in any other quarter; and often when we have a clear sky. Such attraction is well known to meteorologists. Showers, however, very seldom approach from the north-west; and so extremely rare is a thunder-storm from the east, that a farmer considered one of last season as "backing up."

I have spoken of the influence of our lakes on the temperature, but they have other effects. In

cool weather, the atmostphere is often loaded with clouds for many days in succession, evidently the condensed vapor from those wide spreading waters; and so much of such weather have we in winter, that icicles from our roofs are very rare objects. I doubt, however, if those canopies extend much more than a hundred miles into the country. They are often dense enough to "spit snow;" but rarely, though sometimes, sprinkle in summer.

Clouds prevent the radiation of heat into the open sky, and tend to equalize the temperature between night and day. Indeed, under such a covering, the night in winter is often as pleasant as the day. By excluding sunshine, clouds also preserve the snow for sleighing, and for the protection of grass and winter grain, as no heat radiates through water in any of its forms. Formerly there were instances of young horses subsisting well through the winter on the grass they found under the snow.

In sleighing time and cloudy weather, the Cayuga lake where unfrozen is pictured on the clouds, dark, and resembling an approaching shower; yet there it remains through the day. A lurid streak at a lower angle represents the Seneca lake. These appearances are occasioned by the dark waters ruffled by the wind, reflecting less light than the snow.

Fogs are extremely rare in this neighborhood. During a residence of more than thirty years, I have never seen that vapor rise from the ground but once. Sometimes, however, it is driven by the wind from the lake; and sometimes, after a long rain or a thaw, when the air is surcharged with moisture, it is condensed by the wind freshening up from the westward. But I have already extended these sketches beyond my original design. D. T.

REPORTING EXPERIMENTS WITH ARTIFICIAL MANURES.

From the British Farmers' Magazine.

In all our agricultural publications now issuing from the press we see many accounts of experiments made for ascertaining the value of certain substances recommended as manures either for top-dressing or ploughing in. Some of these accounts are elaborately and no doubt faithfully written; and sometimes favorable, or, as it may happen, unfavorable. Sometimes, too, we are told of the same material having a contrary effect on land of precisely the same character, especially if situated in distant parts of the kingdom. Now the discrepancies may often arise from ignorance, want of consideration of the peculiar effect or action of the material employed.

Besides the various substances which have been used for manures from time immemorial, there are others chiefly minerals which are brought into use with various success. The reports of such trials are not always uniform, and defective in so far as the character of the weather or season following the application is omitted to be stated. In my own practices I have used soot extensively for top-dressing wheat, and have harrowed and rolled it in; but if a dry spring and summer followed the soot was of no service. I have used chalk and lime as dressing for light gravelly land; but if a wet season succeeded little or no immediate effect was observable. The same result followed the application of salt, on the same description of land under the like circumstances of season. The reason for the non-efficiency of these three last named substances was perfectly obvious: all three are ready absorbents of water from the air, and in a dry season are eminently useful to growing crops; whereas, in a showery time, the crops need no such assistance.

Saltpetre and nitrate of soda are at present fashionable top-dressing; and those best acquainted with those substances affirm that they are often injudiciously used. On wet tenacious land they never can be so efficacious as on dry sandy or gravelly soils; nor in wet seasons so much as they certainly must be in dry. If I be not mistaken in attributing to them such effects they will always be considered as doubtful fertilizers; because they must be used before it can be ascertained, except by conjecture, what sort of season is to follow.

Mr. Cuthbert Johnson observes that "the agricultural uses of saltpetre have not been examined so carefully or generally as they ought to have been;" and G. Kimberly, Esq. of Trotsworth, "regrets that it has been hastily adopted without references in many cases to season, soil, or quantity, and as a few fortunate experiments have started into a fashion the use of those articles, so one or two unseasonable or improper applications have at once condemned them to neglect and oblivion."

Such reports show decidedly how necessary it is to know correctly the effects of those artificial manures; whether as the food of plants or improvers of the staple; whether as exciters of vegetation or solvents of nutritive matters already in the soil; and also under what circumstances of weather or season they are most active or altogether neutral. These are questions for the agricultural chemist to prosecute; so that no farmer need work on this twilight or be in doubt concerning the direct effects of any manure which comes recommended from competent authorities.

And in all future reports of experiments made with any of those uncommon articles of manure, the reporter should not omit to state what kind of weather has prevailed during the experiments; for the effects, especially of saline substances, are very much determined by the state of the weather.

J. Main.

[Our respected correspondent is right. Much of the success or otherwise of these and many other manures we could name must depend on peculiar circumstances of soil and season. We have heard saltpetre abused one year and highly extolled in the other; although tried on the same soil, the same description of crop, and by the same person.—Ed.]

HAY SEED AMONG CORN.

From the New England Farmer.

We saw an article in one of the southern papers a few weeks since, mentioning that some one, we think in the middle states, had sown clover seed among his corn; and the inquiry was added,

"whether any one at the north or east had tried it?" In reply, we would inform the inquirer that Hon. Wm. Clark, of Northampton, Mass., has for many years been accustomed to lay down his light lands to grass in this way. His communications upon the subject led to the trial of this process upon the farm where we have earned our bread. And we are disposed to recommend a trial of this method. Our belief, founded upon the observation of results in four different seasons, is that the seed will be less likely to fail in this way than when sowed among grain; that the first crop is much more free from weeds; is entirely free from dead grain stalks; is easier to mow; is equally abundant; and better in quality. We think also that grass lay thus made holds out better than others. By this process the young grasses are exempted from the baneful influences of the overshadowing grains, and from the withering heat to which they are exposed when the grains are removed. They are saved from the stinting to which they are usually subjected.

The process.—Spread all the manure; make *no hill;* and at the last time of hoeing, say the middle of July, sow the grass seed among the corn; pass through with the horse-harrow or cultivator, (simple harrow teeth are best,) then hoe, making all smooth, and the work is done. At the proper time cut the corn as near the ground as can conveniently be done. Should the grass do well, the stubs would probably soften so much as to offer very little obstruction to the scythe. But if one be fearful that it might be otherwise, he may take, as is our custom, an old adze or a strong and heavy hoe, and go over the field while the ground is frozen and by a single blow at each hill pare all smooth. An acre may be gone over by an active boy in three or four hours. After the frost is out, let the ground be rolled. In the early part of the season, appearances will be unpromising for a crop; but about the middle of June it will come forward rapidly, and about the 10th or 15th of July will be fit to cut. Land, we suppose, can be laid down as smooth in this way as any other; though we have not heretofore been very particular in this respect, and our grounds, though even enough to work upon without inconvenience, are not made quite as level as when a grain crop is put on.

The last season we took up grass land in the spring; planted to corn, and in July seeded down to grass.

We do not advise any beginners to make extensive experiments, but we do think it will be found good husbandry to adopt this process to a considerable extent on many farms.

BEETS FOR CATTLE.

From a Western Paper.

As experience, and not speculation, is what farmers need, I will give my observations in feeding beets to my cows during the two past winters. In 1838, I put up about 300 bushels of mangel wurtzel beets, 100 bushels of turnips, and some potatoes, for the purpose of experimenting in feeding my cattle through the winter. I knew nothing but what I learned from books, as I was acquainted with no farmers, (nor am I yet) who fed with roots. At first I was at a loss to know how to feed them, whether in a raw state or cooked, but having determined to try both plans I commenced the work, and each did well. Young animals are peculiarly fond of the raw beets, and thrive astonishingly on them; but for cows that give milk, they are better boiled, particularly if a steamer can be used in the process. Though milk cows should have raw beets once in every two or three days if grass cannot be had.

The turnips and potatoes were given precisely as the beets; but I could not determine that either had the preference over the other, as the cows gave about the same quantity of milk, and their condition did not seem changed by either. In feeding the same animal with beets, it was easily told that one-third less than of the turnips or potatoes would make them give the same quantity of milk, of better quality, and they showed better keep.—The beets made the milk better, the butter better, and the cows look much better. On one half bushel of beets per day to each cow, without straw, and a little meal or bran mixed in, they continued in good condition through the winter, gave as much milk as in the summer, and the butter was full as good as in May. My experience during the past winter (1839—40) while I fed on roots, only confirmed my former conclusions.

CABBAGE AS FOOD FOR HOGS.

From the Farmers' Cabinet.

A gentleman remarked, in our hearing, a few days since, that cabbage was a valuable food for hogs. The idea was new to us, and we inquired the manner of feeding. In reply, he gave the following as the result of his experience, the last summer. Having a fine patch of plants, and observing the bottom leaves beginning to decay, he directed his farmer to procure a water-tight cask, and gather a bushel of the lower leaves from the cabbage plants and deposite them in the barrel, with a handful of salt, and one quart of corn meal. On this was poured the contents of the kitchen swill pail, and the whole was suffered to stand undisturbed for twenty-four hours, when the process was repeated, with the exception of the salt—and so every day until the cask was filled with a mass of wilted leaves, about six quarts of meal, potato pealings, crumbs of bread, &c., from the kitchen; all in a state of partial fermentation. He now commenced feeding it to the hogs, and they eat with greediness, leaving other food for this. They were evidently as fond of this kind of mush, as ever "Mynheer" was of *sour-krout.*

While the hogs were consuming the contents of the first barrel, a second was in course of being filled, and so alternately, till the stock of leaves was exhausted.

This gentleman gave his opinion, that he could not have prepared any other kind of food for his hogs, at double the expense, that would have produced results so decidedly beneficial. An increase of appetite, improvement in their general appearance, and better heart, was the result of this method. The cabbage, he thinks, were greatly improved by plucking the redundant fo-

liage; and he intends to plant a large patch of cabbages, the coming season, more fully to test the advantages of this kind of feed for hogs. We invite him, and others who may "experiment" in the business, to give us the result for publication.

ENGLISH MINES AND MINING.

From the English correspondent of the N. Y. American.

Newcastle-upon-Tyne, August, 1840.

That man must be insane who should write a letter at Newcastle-upon-Tyne, about any thing but *coal*. He has but one idea—coal! One thing fills his vision—coal! Coal is the standard of value, and coal dust the circulating medium. The houses are built of coal. The streets are paved with coal. The inhabitants live on coal. The children look as if they were made of coal, and even the white clouds are black!

What a wonderful region is Durham and Northumberland shires? The whole country is undermined. Buildings are erected 700 and 800 feet below the surface of the earth, and streets and railways running for miles in all directions, are daily traversed by thousands of human beings. Newcastle, with its population of 60,000, stands on the *crust* of a subterranean city. Some of its houses have sunken their foundations in consequence of the yielding of the ground beneath. The River Tyne, as large as the Thames at London, floats its commerce over these vast caverns; while at Sunderland and other places on the coast, the ocean rolls its waves over the heads of the miners. The chief wealth of Durham and Northumberland lies hid in the bowels of the earth where a very considerable portion of the inhabitants pass half their time. The coal-pits open their black mouths on every hill and in every valley. They may be distinguished far off by the towering enginery erected over them employed in raising the coal and water from the depths below, and the piles of the former which lie around in hillocks waiting to be transported to market. The country is lined with railways—more abundant than hedgerows—used in "carrying coals to Newcastle." At every half mile, you meet with the little villages of the pitmen (as the laborers are called.) The snug brick cottages are arranged with regularity and taste—each having its *petit* grass plat in front, usually decked with flowers, and its vegetable garden and fruit trees in the rear. What a contrast between these smiling though humble abodes, and the dismal caverns where the villagers spend nearly their whole conscious existence!

Great labor and expense attends the sinking of the shaft of a coal mine. The exact location of the strata must be ascertained by boring before the excavation commences. This determined, you know not what obstacles you may encounter from veins of rocks or streams of water in your descent. And, then, the destruction of human life almost invariably in these perilous enterprises! the gigantic nature of which may be inferred from the fact that the shafts are generally sunk to the depth of 600 or 700 feet, and sometimes to 1200!

TWO GOOD FARMERS.

From the New Genesee Farmer.

Not *too* good farmers—for those that are merely *good*, are almost as rare as white blackbirds. When we say "*good*," we do not mean what is commonly understood,—industrious, money-making men,—but who perhaps apply a large portion of their labor to very bad advantage; but those whose whole course, in all its departments, is such as accurate and repeated experiments have proved best adapted to the soil and climate; which not only affords the greatest profit each year, but is constantly improving instead of exhausting the land.

These two specimens are given in the late report of the Farm committee of the Hartford County Agricultural Society, published in the New England Farmer. The first is that of John B. Davis, of Derby, whose farm consists of seventy-five acres, and from which the following very respectable average annual receipts are derived.

Apples and Cider, - - -	$500
Hay, - - - - -	200
Potatoes, - - - - -	100
Pork, - - - - -	80
Sheep, - - - - -	75
Grain, - - - - -	75
Wool, - - - - -	25

Two men labor on the farm the year through, with occasional additional help, but no precise account of the amount expended was rendered.

It will be seen that the orchard is the most profitable, the trees being kept in the finest condition, to which frequent tillage doubtless contributes. *Five hundred dollars* were received last year (1839) for *winter apples* of the choicest varieties, and forty dollars for cider sold, besides thirty barrels kept [for what purpose?] and apples fed to hogs, cattle, and horse. All the farm, except the woodland, has been subjected to the plough, although hay is the chief object aimed at in cultivation. Only small portions of the land are tilled, on which the cultivated grasses have become less luxuriant. The routine of crops adopted is, 1st, corn on sward with manure; 2d, potatoes with manure (sometimes followed by turnips;) 3d, rye or oats or grass seed. For the corn, (which is Dutton and white flint,) twenty double loads of manure are spread on the grass before ploughing, and afterwards holes dug at each hill in which a small handful of plaster and ashes is dropped and mixed with the soil at planting. The average crop is seventy bushels an acre. The potatoes are planted with equal manuring, and yield two hundred bushels. The rye yields twenty-five, and the oats seventy bushels, two and a half bushels of the latter being sown to the acre, which is ploughed in, harrowed, and the grass seed covered with a bush.

About twenty acres are kept in meadow, which continue in grass from six to eight years, and the average crop is estimated at two and a half tons to the acre.

Of manure, seventy-five loads are made yearly, and fifty purchased; one ton of plaster, half a ton of shell lime, (which is added, as indispensable, to the compost,) and fifty bushels of ashes are also used.

The stock consists of two yoke of oxen, two milch cows, seven hogs, thirty-five Bakewell sheep, and one horse.

The other farm is that of Wm. K. Townsend, of East Haven, on New Haven harbor, and consists of 43 acres of salt grass, and 118 acres of upland. The report of this farm, by the committee, we have read with great satisfaction, and, did our limits admit, we should be glad to give it entire. Such a report, mere matters of fact statement as it is, is more calculated to inspire a taste for farming, than all the fine declamation and eloquent reasoning we ever heard or read. As it is, we must content ourselves with a statement of some of the most interesting facts.

The buildings are arranged with a strict regard to convenience, being erected "after approved models, and they show conclusively that much labor may be saved by judicious arrangements, with but trifling additional expense. For each implement of husbandry, a special and convenient place of deposite is also provided." The fences throughout are good. The soil is sandy and gravelly loam. naturally light and thin, and left in wretched condition by its former occupant. Successive portions have been reclaimed from this condition, by careful and thorough tillage, collecting the stones into strong and durable fences, and applying a heavy coating of manure. With the exception of two fields, which have not thus been reached in the regular order, the farm has been greatly improved. "After such improvement, however," say the committee, "these lands are not, as is too often the case, again reduced to their former condition, or rendered still less productive, by injudicious and excessive croppings, without any return to the soil; but by such subsequent careful treatment, as every good farmer ought to give his land, they are kept constantly improving."

The corn crop, by measurement, has averaged seventy bushels the acre; potatoes, two hundred and fifty bushels; rye, twenty-five bushels; oats (rarely raised,) forty-five bushels; and barley, thirty-two bushels. Great crops of pumpkins are also obtained, by planting in large manured hills ten feet apart each way, six or eight seeds, the two most vigorous shoots being allowed to remain.

Three hundred double loads of manure are annually made on the farm, of which more than fifty are from the hog-pen. It is always applied unfermented, except to meadows and root crops, where compost is used. Three-fourths of a ton of plaster are yearly spread upon the meadows and pastures, and fifty bushels of shell lime applied to the compost heap.

Great profit has been derived from the breeding of improved stock, consisting of Durham cattle, "Thin Rind" hogs, and Bakewell sheep. The use of the revolving horse-rake in securing hay, of the cutting box for feeding stock, and of stables for cattle in winter, has effected a great saving.

Accurate and regular accounts of all operations are constantly kept, from which the following statement is taken of cash received the past year, *over and above the consumption of a large family*:

Fruit, - - - - -	$ 200
Vegetables, - - - -	50
Neat stock, - - - -	1,310
Hogs and pigs, - - - -	585
Wool, - - - - -	50
Milk, butter, and calves, - -	2,143
Rent of stock, - - - - -	50
Gross income in 1839, - -	4,388
Deduct cash paid for labor and feed of cows, - - - -	1,452
Net income in 1839, - - -	$2,936

The great profit thus secured, appears to have resulted from the establishment of a well digested system of farming, faithfully and energetically carried out, and from the guiding of all the operations by constant and accurate accounts.

HOGS—MODE OF FEEDING.

From the Boston Cultivator.

Wm. Buckminster, esq,—Sir: I send you an account of some hogs I killed this fall, and the manner of keeping, which you can publish if you think deserving a place in your valuable paper.

I killed two hogs, one sow, and six pigs, which the sow raised; their weights were:

One Hog,	631 lbs.
" "	566
" Sow,	509
Six pigs,	1200
	making 2909 lbs.

They have eat 250 bushels corn, at 60c--$150.
" " 200 " vegetables, 30c—210.

My manner of feeding them was as follows: From the 1st day of September to the 1st day of March, their breakfast was raw potatoes, their dinner raw turnips, beets or carrots; their supper one quart of corn each. The 1st day of March I filled their trough with corn and water, and kept it so until the day I killed them. I have a warm place for them to sleep in, and a yard where I make my manure, 36 by 20 ft. with a stone bottom, and have now in it, which I have made this summer, 125 horse loads; I care not what the breed of a hog is if they will eat well, and we do our part, and give them plenty of corn. Six years ago I bought 20 pigs, and sold to my neighbors all that were saleable, and they told me I had better knock the brains out of the rest of them and save their keeping, but I raised as large hogs as any of them; I kept the breed during the time, only shifting the sows twice in six years. Last year I killed 3 hogs weighing 1500 lbs.

BENJAMIN SMITH.

Duxbury, Ms. Dec. 13, 1840.

Our friend of Duxbury does not seem to think highly of cooking food for hogs; but many accurate experiments have been made which show the advantage of cooking it. No doubt many of these are exaggerated. Horses will work quite well on corn, provided always they have time enough to chew and digest it. It should always be given them in the evening when they have time for both.

Hogs need a change of food, and whole corn may take its turn in the change—but we must think that well cooked food is in general far superior to that which is half cooked. To prove this we have need only to compare heavy bread to that which is made in the best manner.

There is a difference also in breeds of animals, in regard to the quantity of food necessary to fatten them. We want small bones, small heads, and broak backs, for swine. Do we not see that some men eat more than twice as much as others, and yet are more lean than they?

In improving the breeds of animals we are liable to one general error,—we make pets of the selected stock and the animals are soon overgrown. We gain nothing by rearing very large horses, oxen, cows, or hogs. Our main object should be to improve their proportions. ED. B. C.

FIRST EXPERIMENT IN BEET CULTURE—MANAGEMENT OF HOGS.

For the Farmers' Register.

About the middle of April last, I was presented, by the editor of the Farmers' Register, with about two pounds of sugar beet seed, which had been sent him with a number of other seed, for gratuitous distribution, by that public-spirited and enterprising individual, Mr. James Ronaldson, of Philadelphia. Being anxious, though unprepared, to make a small experiment in root culture, I accepted the seed, and bought at the same time two pounds of mangel wurtzel seed, which I determined also to plant. The season being well advanced, and all the land which had been prepared during the winter having been either planted in corn or sown in oats, I deemed it entirely too late to plough any grass or sward land for roots, and was at some loss to know what to do with the seed. I at last determined to take a piece of ground which was planted in multicaulis the preceding year, and which was left in a very clean state. Previously to the multicaulis crop, this land, a light sandy loam, would have produced not more than 25 bushels of corn to the acre, and after that crop I think much less, as I conceive the multicaulis to be a great exhauster. Under these circumstances, some of my friends prophesied that my land was entirely too thin for roots, and that planted in beets it would bring nothing. I was, however, not deterred from the trial, as I conceived it the best I could do.

I first ploughed the land seven or eight inches deep. Spread over it a heavy dressing of unfermented farm pen manure, mixed with some stable and also some hog pen manure. The manure, though I picked for the finest the pen would yield, was still very coarse; and would have been pronounced entirely too much so for root culture. I again ploughed to cover the manure and laid off my rows with a *marker* three feet apart. The land was well pulverized by the second ploughing, and the manure well incorporated with the soil. Some of the rows were ridged before marking off; but in the result I cannot perceive that the ridging was at all beneficial. On the 14th of April I planted the seed, after soaking them from twelve to forty-eight hours. Those soaked longest came up quickest and best. I am inclined to think they would not be injured by soaking seventy-two hours, and would prefer that time to any less than forty-eight. The seeds after soaking were rolled in a little dry slaked lime, merely to enable the planters to handle them more readily. They were then dropped *by hand*, for I had no drilling machine, two to four seeds in the row, at intervals from six to eight inches.

On the 10th of May the beets began to show very prettily throughout the whole row. On the 21st of same month thinned to six or eight inches apart, and set out in missing places, the day being rainy. A few days afterwards the first hoe weeding given. First day of June the first ploughing was given, and I thought the beets promised badly. A second weeding was given on the 23d June, and by the middle of July they looked very promising. This was all the work given them, viz., one ploughing with the common trowel hoe plough, and two hoe weedings. I did intend giving another ploughing, and the land was foul enough to demand it, but on attempting it the tops of the beets were so flourishing, and at the same time so brittle, that the horse did more damage by breaking them off than I conceived he did good. On the 10th of August the beets seemed to me to have reached their prime, and I commenced boiling them for my hogs. On the above land, and with the above labor, (land and labor both insufficient for a first rate crop of corn) I have made a very pretty crop of beets, the stand being pretty good, and many of the roots weighing twelve pounds. I do not wish, in giving the details of my own trial, to be understood as advocating poor land and little work for beet culture; but only to show how easy and sure the culture is; and how very successful it would be in good land and with good culture. On no account would I hereafter be without my patch of beets.

I also sowed a pound or two of carrot seed, under exactly the same circumstances, and in the same land, but the return was very far inferior to the beets. I have no hesitation in saying that the beets yielded more food for my hogs than any thing else I could have put on the same land.

I also for the first time tried the ruta baga. One patch, sowed July 10, previously cow-penned, deeply ploughed and heavily dressed with ashes and scrapings from the negro quarters, did well. The stand was good and roots large. I am satisfied they would have done better had I sown earlier, say June 28th. Another patch sown a very few days after the first produced nothing. A dry spell happened to come on and the seed were a long time vegetating, and, when they did come up, the young plants were all destroyed by the fly.

In common with many of my neighbors I am trying to throw off the heavy burthen of annual tax which we have been so long paying to our western farmers for pork and beef, and am now attempting to raise my hogs by grazing and stye-feeding. I have an undoubted grazing breed, and the only difficulty I have had is the frequent injuries done to the hogs by the little negroes attending them. My plan, or rather the plan I aim at, is to have my pigs born twice a year, viz., the first litter about the first of March, and the second about the first of September. In the latter case my object is for such growth to be attained by the pigs before winter as will enable them to stand the cold. Pigs of both litters are killed the following December 12 months, being respectively 15 and 20 months old. The pigs of the fall litters I find do not stand being kept in sties during the following winter. I have constructed a small wood range for them, inclosing a running stream of water. In this lot they pass the winter, being confined

every night in warm and comfortable pens at the house of my hog-minder. All my other hogs, viz.: sows and store pigs of the springs litters are kept in sties at the farm-yard. Their pens are regularly littered and cleaned out once a week. I litter with leaves from the woods when I can get them dry, and with straw, when I cannot.

As to food, I aim at the following plan. As soon as the clover is sufficiently started I turn all my hogs in it. They remain on the clover till wheat is cut. They then glean the wheat and oat fields until all the grain is well picked up. My hogs never fail to improve very fast on the clover and wheat fields. By the time the wheat and oat fields are well gleaned, cimblins will be ready for them. Cimblins will last till pumpkins come to hand. At the same time that pumpkins are ready, beets may also be boiled and will make a most excellent wash mixed with a little bran or hominy. Wash made of beets, carrots, parsnip and ruta-baga, together with a little grain, such as tail-ends from wheat and short (or "refuse") corn, I look to for carrying them up to clover time again. My fattening hogs I feed liberally with short corn for 4 weeks before killing, if I have it, and if not, with good corn. This year I have fattened 6000 wt. of pork without resorting to good corn.

If the above crude remarks induce a single farmer to make a crop of roots, I shall be more than compensated for the short time they occupied.

A LOWLANDER.

MANURES AND THEIR APPLICATION.

From the Boston Cultivator.

Flesh of all kinds is strong and valuable manure—it operates rapidly when buried in the field, and in the compost heap it contributes more richness than almost any substance which we are in the habit of using. All kinds of oil, fat, blood and offal of animals are exceedingly powerful, and none of these should be lost. At this season of the year, when farmers kill their hogs and cattle, this offal, &c. should all be covered in the compost heap. Hogs' bristles, hair, tanners' waste, and shavings may often be collected in great quantities.

Fish were formerly used in many places near the seacoast for manure, but the practice is now discontinued—two alewives were placed in a corn or a potato hill, and nothing else was applied. In a course of years it was discovered that this manuring impoverished the soil, and some thought it brought a curse upon it on account of the misapplication of what was providentially intended for food.

The truth is, a small mess of manure of any kind put in the hill only, for the raising of exhausting crops, will impoverish all kinds of soil, for it creates a greater draft in the roots where it is applied, and shoots them out in search of food in places not artificially supplied with enriching matter—a rank growth of stalks in the hill requiring more to nourish them than a small growth. Had these fish been put in the compost heap and then spread over the ground and covered, the effect would have been different.

We see the powerful effect of matters of an oily nature when we witness the operation of wool waste on grass lands. No animal manure, or excrement of animals, is known to be half equal to it. It is true some animal manure is usually found in wool waste, but the extraordinary effects of this manure must be principally owing to the animal oil in the wool. Large quantities of this matter may be found at woollen and carpet factories, and farmers who can will do well to procure it at considerable cost. It should always be put into the compost heap and mixed with sand or loam before it is carted on to the mowing land.

Horse stable manure.—We rank this next to oil, fat flesh of different kinds, and offal. No manure will hold on longer than this, and when it is properly managed there is no difficulty in bringing it to operate early. Yet in many places horse manure is not highly valued. The reason of this is it is either suffered to lie in a heap and to heat too much, turning white like the ashes of walnut wood after all the substance is consumed—or it is suffered to lie scattered abroad until its goodness has nearly all evaporated.

We have known many farmers who were very careful to make the most of their hog manure, yet they would have less than two cart loads annually from the horse stable. When this manure is thrown out of the stable it should be immediately mixed with something that requires to be heated. Peat much, soil of almost any kind may be used; these will keep the horse manure from heating too much and washing away. But a still better mode is to keep the horse standing on his manure. This cannot be practised in large tavern stables, but in most private establishments there is no difficulty in it; and both in winter and summer a horse may be kept much more comfortable than in any other manner.

The horse stable should have no floor—and where the ground will admit of it the horse should be kept in the barn cellar, or where he may be partially under ground. Here he is warmer in winter and cooler in summer than when he is wholly above ground; the flies pester him less—they will not trouble him in the least if the stable is darkened, as it may be—without a floor, he stands on his manure, well covered daily with litter—and here his hoofs are never known to crack, and the horse never becomes lame on account of fever in his feet, arising from the dryness of a floor. Here also the horse lies at his ease and rests his bones.

But this is not all—his manure is more than six times as valuable as when he is kept in the common way, for fifteen loads of the best kind may be made each year from a single horse. It is very fashionable to speak of the quantity that may be made from hogs, but many seem not to consider how much may be made from other animals. In this mode only do we save all the urine of the horse; and this contributes to keep the whole from burning; and while the horse stands on it there is no danger of losing its virtues—we can keep it till we want to use it. As soon as we overhaul this heap or throw it out, we must watch it, and not let it heat too much.

CALVES RUNNING WITH COWS.

A writer in the Farmers' Cabinet says—"My experience extends to many hundred cases, for upon the hills of Scotland it is the universal practice to permit the calves to remain with their dams during the summer, but such are never known or expected to make superior cows for the dairy, and for this reason.

"Depend upon it, to make a deep milker, the bag must be periodically distended, and those who suppose that to allow the calves to remain with their dams through the summer would be to the injury of the cows, have not come to that conclusion without 'reason or evidence.' Besides, does not the writer in a measure admit the possibility of the case, when he thinks it possible that the cows, under such treatment, might grow fat?—as they assuredly will—it is not often that cows, when kept to the pail, are troubled with this inconvenience." LOTHIAN.

A COMPARISON OF THE DIFFERENT BREEDS OF SHEEP.

From the Western Farmer and Gardener.

In the western states, where land is, of course, not so valuable as in the east, the Bakewell breed of sheep, although of a more tender constitution than the Southdown and Cotswold, and of coarser and smaller fleece, may be advantageously kept for their wool, notwithstanding its quality is rather coarse; it appears, however, from all the information on this subject, (the comparative value of the breeds of sheep,) that the Southdown and Cotswold, are much hardier, better nurses of their lambs, and require less attention through our winter, and will live on shorter pasture in summer. The Merino and Saxon sheep have often too much the same objection as the Bakewell; they are of rather weakly constitutions, and not very good in rearing their lambs. Some of the Southdown wool is pretty fine and makes good cloth; the mutton is, perhaps, superior to all other kinds, (excepting some of the small Welsh breeds,) their constitutions are very vigorous and strong, and they will make a living in any situation. The Cotswold are equally hardy, but want richer keep than the Southdown, their fleeces weigh heavy, and their quarters have been known to reach 80 pounds in England. Some of the Southdown and Cotswold lambs have weighed, at six months old, 60 pounds, and when full grown 240 pounds. It seems, amongst many other "hard cases" in agricultural efforts for improvement among farmers, very difficult to convince people of the benefit they derive from having good stock. They complain too much of the first cost, without considering that in two or three years there is a fair prospect of not only seeing their money back again, but probably ten times as much more. We do not wish to advise farmers to go beyond their means on much uncertainty, but we do say, that twenty dollars laid out for the best breed of pigs, and fifty to one hundred dollars for sheep, or one hundred to two hundred dollars towards improving their cattle, will, with proper management and attention to the sale of their produce, pay a handsome profit at the end of a few years, besides supplying superior articles at cheaper keep (on account of the fattening properties of the best breeds) for domestic use, and enjoyment of both sight and taste. We subjoin, in the first place, a comparative statement of the value of the different breeds of sheep.

Saxon lamb	6 months	old, weighing	18	pounds at 6 cents, $1 08
Merino lamb	do	do	20	1 20
Bakewell	do	do	30	1 80
Cotswold	do	do	60	3 60
Southdown	do	do	50	3 00

In the second place, their wool

Saxon fleece	weighing	3 lbs.	at 40 cents	$1 20
Merino	do	3	31	93
Bakewell	do	5	20	1 00
Cotswold	do	10	25	2 50
Southdown	do	5	31	1 55

Of course this is rating the best breed of sheep at the price of the common kind, which cannot be for a long time to come. These animals are now worth about twenty dollars each at least.

In the third place we give a comparative statement of the value of sheep when full grown:—

Saxon sheep	weighing	50 lbs.	at 4 cents	$2 00
Merino	do	60	4	2 40
Bakewell	do	110	4	4 40
Southdown	do	240	4	9 60

DOMESTIC ANIMALS—THEIR DISEASES AND FOOD.

For the Farmers' Register.

Reason would say to us that no farmer should be without horses, cows, hogs, and sheep. If the question be asked, which of those animals could, with most propriety, be dispensed with, perhaps it would be differently answered by different persons. Although the horse is very valuable, yet we could use oxen, and dispense with him. Although the hog yields the greater portion of our meat, yet we could dispense with him. Although the cow yields us meat, milk, butter, and leather, yet we could (though illy) dispense with her. Although the ox yields us labor, meat, and leather, yet we could dig with the hoe and spade, and (though illy) dispense with him. But the sheep yields us meat for sustenance, and wool and leather for comfort, and how can we dispense with him?

After an understanding that each farmer is to depend on his own resources, (and this is the true principle,) if the question be asked me, which of those animals I would first relinquish? I would answer the hog—second the horse—third the cow—and lastly, the sheep. I can make bread without the horse or ox; I can subsist without bacon or beef, but the sheep affords me both meat and clothing; therefore, with a single choice, give me the sheep; but, as above remarked, I think that no farmer should be satisfied with less than all. But as there are exceptions to many general rules, so with this; for markets affect localities, and localities affect health—consequently, the circumspect farmer will adapt his business to his situation, and depend on barter to supply his wants, always remembering that this bartering is a consumption of time, consequently costly.

As to the breeding of horses, I profess to know very little about it; therefore, will dismiss the subject with a single remark, that a small horse is very nearly worthless on a farm. The only dreaded maladies amongst our horses are grubs and cholic; both of which, I have never failed to cure, by drenching with a decoction of white walnut bark. As to the proper food for a horse, I believe there is nothing equal to the old Virginia plan of corn and fodder.

Although I am a breeder of cattle on a small scale, and have some blooded animals, yet I shall hazard no remarks on the subject; only this I say, a small cow is almost as worthless as a small horse. I dread no disease of my cattle but hollow-belly and hollow-horn; the first of which I cure by feeding, and the second, by simply boring into the horn, underneath. So soon as a cow's eyes begin to appear dry and sunken, he or she should be caught, and the horn bored—if pure blood appear, stop boring that horn, for no disease is there—next bore the other horn. But one who is experienced can judge of the hollow-horn, either by striking or feeling. It may be well, in this disease, to apply a very small portion of spirits of turpentine, or a larger portion of any kind of oil to the exterior; but nothing should be applied to the interior of the horn. To rid cattle of lice, I cast salt profusely on their bodies during the whole time of their yarding, remembering to avoid the practice on a cold day. The salt not only destroys the vermin, but causes the cattle to be kindly affected. As to the food of cattle, I know from experience that the old Virginia fashion is murderous. Straw cannot be depended on; corn shucks (husks) are very good, but they are not in sufficient abundance; hay is badly wanting, and cabbage and roots would be extra.

Hogs are next in order, and I profess to know something about them. The first hogs I ever owned were the old English, and as they cost more than they came to, I got rid of them. I next sought after, and obtained the most chumpy wood hog to be had; for in those days there were no blooded hogs amongst us, except the China, and they were considered too small. These I continued, with some improvement, to propagate for more than twenty years, and finding that they, as well as they old English, cost more than they were worth, I should long since have abandoned breeding the hog, had not native pride forbade it. I next crossed these from a Barnitz boar, by which improvement I was enabled to balance the hog account at the end of the year. I next obtained a Mackey sow, the progeny of which was no improvement. I finally tried a cross of Berkshire and Bedford, Berkshire and Barnitz, and Berkshire and Mackey, all of which are good; but the stride in improvement is in the order in which their names stand. Being satisfied that there is no profit in breeding the best woods' hog in our country, I have killed and sold all such, nor could I be induced to accept of one as a present. When our country was full of weeds and wild roots, the woods' hog answered our purpose; but now, when our reliance is wholly on our fields, away with the long leg, long nose, squealing woods' hog, and give me the short leg, short nose, lazy, grunting hog; then I have no creeping through fences, no running away, no lice, no measles, no worms.

My hogs are good, not fine; but in one more year I hope to compete with any honest Yankee. I have a lot of pigs, now six and a half months old, which would weigh on an average, about 90 pounds net, which are intended for porkers about the first day of next March, when they will be nine months old, and will weigh about 140 pounds. They were injured by weaning when very young, for the purpose of bringing my sows to breeding at a specified time, otherwise they would be larger. My sows have pigs now about three weeks old, which are intended for pork when about twelve months old, and are then expected to weigh about 250 pounds.

The first pigs above mentioned, were fed from the 20th day of May till November, on cabbage, and a small portion of inferior rye meal, and could not have been called [fat] till lately, nor would a judge now call them so.

The young pigs, with their mothers, are fed with rye meal, with a small portion of corn occasionally. My fattening hogs, to be killed in the winter, are fed first with corn, cut up at the roots, so soon as the hog may be enabled from the maturity of the grain to gather it. The whole plant is cast into the pen, and after the grain, nearly all the plant is eaten. In addition to this, they have a daily, though moderate allowance, of either cimblins, pumpkins, cabbages or beets, and a goodly supply of weeds and grass. The lousy and wormy cabbage and beets are first, and, perhaps, only used in this way, and the weeds and grass are both food and manure. When I begin to cut up my corn, for the purpose of sowing small grain, my rule is to first pick, and stack only such as have ears; after which, the barren stalks are gathered for the hogs and horses. From this period I discontinue casting the whole plant to the hog. When the barren stalks are examined, they will be found to contain a much greater portion of saccharine matter than those which have yielded grain—hence, my preference in their use. As to the relative value of the secondary vegetables for feeding of hogs, with my present experience, I would prefer the cabbage; though it may be proper for me to remark, that my feeding with carrots and parsnips are very limited, and that perhaps I should have excepted the artichoke. But in some localities the cabbage cannot be raised to advantage; whereas, the beet and artichoke seem to be adapted to every climate, and nearly every soil. Cimblins and pumpkins are a general failure with me. This year I raised a small lot of Jerusalem artichokes, which my pigs are fond of rooting after; but as to their value I cannot speak, though not doubting it, I have secured a sufficiency to plant an acre next spring.

To rid my hogs of lice, I cast ashes on them when they (the hogs) are wet. For mange, I use oil, or any kind of grease. For worms, I give ashes and charcoal; without which precaution, my hogs of the old stock have sometimes been disgustingly wormy, but with their use not a worm is to be seen. Of late years I have no measles on my hogs, and I attribute its disappearance also to the use of ashes, of which the hog at intervals will freely eat, without compulsion. It is but very seldom that we have any malady amongst the hogs of this region, except those above mentioned.

In concluding this subject, I would remark that there are a good many blooded hogs in this section of country, but as they have been run down

by breeding in and in, the people have been discouraged, and I fear it will take years to regain confidence.

Lastly, I speak of sheep. I have been acquainted with sheep all my life, and have, except one or two years, owned and raised them since I was twenty two years old, (say 28 years.) The start of my flock was the common long legged, jumping, bleating, hairy sheep. These cost me but little money, to be sure, but they cost me much trouble and vexation; consequently, truly can I say, "it was great cry and little wool," ay, and meat too. I next got a cross with Merino, which was some improvement. I next purchased a Bakewell buck, with which cross I have a good flock. I finally have the Lincolns, with which I am highly pleased; and now away with the scrubs for me. I keep a flock of 200 to 400, and as my experience and provender may increase, I propose an increase of numbers. I am much laughed at by the majority of my neighbors for purchasing sheep at $30 to 60, but my pride is gratified when I notice those very scoffers stopping anon, and gazing with admiration at my flock. Those blooded animals are short legged, quiet, greasy, woolly sheep—no jumping over fences, no running away, no fuss. My flock is grazed on fields amongst the mountains, through the grazing season, and brought home for wintering. When at home, they go at large in all open weather through the winter, but are confined when the weather is disagreeable, with the exception of ewes with young lambs, and about to yean. I have lately completed a close plank enclosure of about half an acre, with good and sufficient shelters for my flock. My fattening wethers are now in this enclosure, but will shortly be removed to another, and my ewes and last spring's lambs placed therein. There will be small apartments within this enclosure for the accommodation of ewes with young lambs, and about to yean.

The flock will be fed with hay and sheaf oats, and the ewes with young lambs will have the addition of beets, cabbages, and turnips.

It is complete folly for any one to attempt the raising of stock without attending to them, and particularly so as regards sheep. Clear them of ticks, lice, and worms, and no stock can equal them in profit. It is all-important that the flock should be attended daily through the summer season, particularly through the heat of day, for the purpose of keeping them in a clean shade, otherwise they will lie amongst their own filth, greatly to their detriment. In damp warm weather the sheep need salt; at other times I would not say they require it. Weeds are not proper food for sheep, for they scour; but the finer grasses and brouse are their natural food, consequently, most grateful and fattening. When confined, my flock have pine at will. I dock the tails of my sheep, and mark the ewes and wethers differently, so that at any time I can lay my hand on the wanted animal. Ewes that are well fed, will rarely disown their lambs, unless they have twins; nevertheless, as a precaution, as they are about to yean, each, or two or three together, should be put into a cot until their lambs are a few days old, when they can tramp about and distinguish their mothers.

There are only two diseases common to sheep in this region, to wit: rot and worms. For the rot I know of no cure, and have to rely on books for preventives; nor do I believe that the rot is so common amongst us as imagined, for the worm in the head creates a distemper, the external appearance of which is very similar to the rot.

For the worm in the head I give tobacco snuff. By casting the snuff into a trough, and sprinkling salt thereon, the sheep in a scuffle, each for his share, inhale a portion into the nostrils and swallow the balance, which I am persuaded not only expels the worms in the head, but has a goodly effect on the bowels. The grower of tobacco should never fail to put his sheep on his sucker field; for the experience of my life, and that of others, proves the practice to be highly beneficial.

I have, during my life, seen only two cases of reeling sickness, and never a case of either foot rot or pox, or any other disease to do a serious damage, besides those above specified.

Perhaps the greatest evil attending our sheep, is the tick, (or large louse,) besides which, they are sometimes troubled with the louse proper, which is very small. For the destruction of those vermin, I have used a compound of train oil and tar; but this, although effectual, is filthy to both man and beast. I have tried the Yankee plan, of plunging the sheep into a vat, or trough of soap suds, and find its use cheaper, more expeditious, and more effectual than the oil and tar. The proper time for this operation at shearing. The lambs are then hardy, and before the clipped sheep is untied, immerse his whole body back-foremost in the suds. Economy will suggest the propriety of placing a large piece of bark (for which purpose poplar is best,) on the end of the trough or vat, for the purpose of casting back the drainage for further use.

When once a flock is clearly rid of those vermin, I suppose it impossible that they can regain them, except suffered to mingle with a lousy race; consequently, economy would further suggest the propriety of destroying them *in toto* as soon as practicable. And furthermore, it would be proper to remember, when a sheep may be brought in from another flock, to have him thoroughly purged before his introduction. Finally, if an estray scrub should get into your flock, and you cannot quickly or conveniently get him out, shoot, and pay for him.

Z. DRUMMOND.

Amherst, Dec. 15th, 1840.

THE FARMER'S WEALTH.

For the Farmers' Register.

Being diseased and confined to my room, and having read till satiated, I propose writing for your agricultural paper. I know not altogether what my subject may be, but this I know, that although confined in my hive, I am not content, like the drone, to eat idle bread. And although I may not be able to reach far enough to gather genuine honey, yet, sir, I have lived long enough to know, that the ingenious bee can extract some honey out of the coarsest material, and that coarse material, my fellows are welcome to. Indeed, sir, do I not write many scraps for you, when not confined, and are you not kind enough to insert them? What, sir! does the farmer only live to dig, and eat, and sleep, and die, and be remembered no more? Has he no self-pride, no national pride, no charity? Has

he learned nothing by observation, and profited nothing from the experience of others; and shall he die without attempting remuneration? Many farmers consider themselves independent of their fellows; "They know enough about their business, and ask no favors." They prattle as loudly as pet geese, and I wish I had the means of letting them know that they have no more brains. The most enlightened farmer is yet comparatively ignorant of his business as a science; and until scientifically prosecuted there can be no comfortable profit. It is true, that many farmers do, by dint of hard licks, gather up a fortune; "but when they die, they know not whether they leave it to a wise man, or a fool." When the farmers as a body shall become convinced that they are not mere drudges, and their official duties more than simple clod-knocking; and that for the sake of health and weath, every art and science can, and should be brought to their aid—then, and then only, shall they and the nation prosper. I continually remember your motto, Mr. Editor: "that whosoever could make two ears of corn to grow where only one grew before," &c., but, sir, the process by which the double crop is produced must be promulgated, and then truly the author "deserves better of his country than all the race of politicians put together."

But whither am I wandering? When I took my pen, it was with the intention of writing on the subject of domestic animals; but now I doubt whether I shall at all touch the subject, yet, I beseech you bear with me, and I know you will, when I solemnly declare that my intentions are honest and charitable.

I spoke a short space back, of wealth, and now let us inquire what constitutes the farmer's wealth? I wish I had the power of indelibly imprinting in the farmer's mind, the query. What constitutes the farmer's wealth? Reflect farmer; investigate the subject, for investigation leads to understanding; and when this matter is understood, all will be plain sailing. Yes, although the winds may blow anon, and the waves toss us from the direct course, yet knowing the situation of the breakers, we shall finally arrive safely in port.

What constitutes the farmer's weath? My dear sir, this subject is too deep for me, but let me try it.

Does money constitute the farmer's wealth? Oh no; money is only the representative of property; I can neither eat, drink, nor wear it. It will not manure my grounds, neither is it medicine.

Is it waste or poor lands, which constitute the farmer's wealth? Oh no; these like the money are unprofitable in any hands. It is true that the stock of money may be improved by lending it to others on usury; so likewise can the waste and poor lands be improved by a loan. If I lend to my neighbor, I may lose, although I take security; but if I tend to my land, I am certain, with proper demeanor on my part, to get back in due time both principal and interest.

Is it slaves which constitute the farmer's wealth? Oh no; for although these constitute a portion of the bone and sinew of the country, yet there is no dependence in them; they must be ordered, followed, and with few exceptions driven, and sometimes whipped. In early days, when the forests were to be felled, and the ground tilled with the coulter and hand hoe, slaves were valuable; but now the scene is changed; the lands are fenced, the stumps gone, the grounds become compact by the combined operations of sun, wind, and the tramping of animals; and consequently a neat and scientific culture must be adopted, or there is no profit. Our slaves are ignorant, which is one great barrier to improvement; but the greatest is their lack of interest in their labors. Where there is no interest, there is neither industry, nor economy; and where these are wanting all is misery. Be not uneasy, reader, I am a slaveholder, and intend to hold on to them; for I am persuaded that until a general emancipation I can do no better.

Is it race horses or whisky? Oh no; these are always a curse in the hands of the farmer.

Is it trading? Oh no; remember the old adage of too many irons in the fire; a speculator cannot be a farmer, nor *vice versa*.

Is it a number of bony horses, cows, and pigs? Oh no; misery on the animals, and misery on their owner.

In what does the farmers' wealth consist? I presume that it consists of strength of mind, strength of body, education, industry, economy, rich lands, high fences, stout horses, fat cows, hogs, and sheep, a snug house, and a tidy wife.

Just as I expected, my paper is out, and I have not touched the intended subject, but I trust that this is not my last.

MOUNTAINEER.

Amherst, Dec. 1840.

SOWING GRASS SEED THICK AND EVEN, NOT THIN AND IRREGULAR, IS THE TRUE INTEREST.

From the Farmers' Cabinet.

One of the most frequent errors in agricultural operations, is sowing grass seeds too thin and unevenly; great is the loss in either case, while nothing is easier than to remedy both. In the spring of 1838, clover-seed was very scarce and dear; some sowed none, and others scattered it as thin as possible over the ground, and the effects of this proceeding have been visited with great severity on the delinquents. There has been a deficiency of hay and pasture, a thin, bare sod to plough down; the manure heap has shrunk in its dimensions for want of provender, and the subsequent crops have been proportionably starved and diminished. This season clover seed is very abundant, cheap and of good quality, and it might be well for the provident to lay in a store against a season of scarcity and high prices, and this may readily be accomplished by putting it in a tight, dry cask, through the bung-hole, and bunging it up and keeping it in a dry place where it is believed it will remain good for several years to come. Clover should be one of the grasses sown, but other seeds should always accompany it, as there is a larger crop where several kinds of grasses are grown together, sometimes the season being favorable to one and not to another. Many farmers begin to think it more profitable to raise orchard grass than timothy, where selling of hay is not intended, as it furnishes more pasture, both early, and late, and is equally good, if

not better, for home use as hay. Timothy bears a higher price in the market than other kinds of hay, and the reason probably is, that horses eat less of it in a given space of time, as it is a good deal of work to chew it; hence, tavern-keepers uniformly prefer it, being for them more economical. P. D.

DAMP STABLES.

From the Farmers' Cabinet.

Sir:—When I came to the farm which I now hold by purchase, I found the stables built under large trees and near a spring of water, with a northern aspect; my horses were soon in poor condition, with long and rough coats, and almost always lax in the bowels, nor could I get them up by extra food or lighter work; but my cows suffered most, for they were always sick; their milk fell off, and their butter was poor and of a bad color and taste, and four of them slipped their calves before their time: when the spring came, they left their winter quarters in a worse state than I had ever seen them, and two of them died from the scours on going to pasture. On inquiry, I found that the tenant who had left, had always been, what the neighbors termed, unfortunate in his horses and cattle, and from that cause, more than any other, he had not been able to make both ends meet. The truth flashed upon me in an instant, and in a very little time longer than it has taken me to tell you my story, I had commenced pulling down the stable, the unhealthiness of which had been, I was convinced, the cause of all the evil and all the loss, and it was not more than two days before there was not left one stone upon another of the whole fabric. I now set to work and erected another on higher ground, removed from water and clear from the shade of trees, with a south-east aspect and dry capacious yard; and from that day I have had neither sickness nor sorrow in my out door household; my horses live on less food, are always sleek and in good working condition, and my cows are a credit to their keep; our butter brings two cents a pound more in the market, and for the last year our sales are more than doubled from the same number of cows, and the same pasturage; and no more premature calves. Instead of watering my cattle, as heretofore, at the spring under the trees—the water cold, with a deadly taste and bad color—I sunk a well and put in a pump, and at a long trough in the yard for the summer, and another under shelter for the winter, my cattle slake their thirst, without setting up their coats as they always used to do after drinking at the hole under the trees; even when the weather was warm, they were accustomed to shake all over as though they were in a fit of the ague, after drinking their fill of this water; and to this, with the bad aspect of the stables, I attribute all the sickness and misery which I have experienced amongst my cattle and horses.

I have been induced to tell you the above, by reading in a valuable English work, called "Stable Economy," some observations which would go to show that the writer, like myself, had *enjoyed* the experience of the truth of what he so well describes; and as they fully corroborate all my convictions, I should be glad of the opportunity to present your readers with what he advances on the subject, if it meets with your approbation; and am your constant reader, M.

"A damp stable produces more evil than a damp house: it is there we expect to find horses with bad eyes, coughs, greasy heels, swelled legs, mange, and a long, rough, dry, staring coat, which no grooming can cure. The French attribute glanders and the farcy to a humid atmosphere, and it is a fact that in a damp situation we find these diseases most prevalent: when horses are first lodged in a damp stable, they soon show how much they feel the change; they become dull, languid and feeble, the coat stares, they refuse to feed, and at fast work they cut their legs in spite of all care to prevent them: this arises from weakness; and while some of the horses catch cold, others are attacked by inflammation of the throat, the lungs or the eyes; most of them lose flesh rapidly, and the change produces most mischief when it is made in the winter season. Horses in constant and laborious employment must have good lodgings and kind treatment; but where the stables are bad, the management is seldom good, and it is no exaggeration to say, that hundreds of valuable horses are destroyed every year by the combined influence of bad stables and bad management. And although excessive toil and bad food have much to do in the work of destruction, every hostile agent operates with most force where the stables are of the worst kind.

Stables should always be erected on dry ground or that which will admit of perfect draining, with the surface a little sloping. Stables built in a hollow or on marshy land are always damp, and when the foundations are sunk in clay, no draining can keep the walls dry; the dampness will follow up the walls from the deepest foundation. It is true that damp stables may be rendered less uncomfortable by strewing the floor with sand or sawdust, and, in some cases, a stove-pipe might be made to pass through the stable near the floor, but such stables are liable to frequent and great alternations of temperature at every change of the state of the atmosphere. Some of the means usually employed against dampness in dwelling houses might be adopted in the construction of stables, so as to prevent the walls from absorbing the moisture of the soil, such as a foundation of whinstone to the surface of the ground, covered with a coat of Roman cement or a sheet of lead; or the foundation may be sunk so low as to admit of its being laid in coal dust or other substance which does not absurb water; and, although precautions of this kind may sometimes prove salutary, they ought not to be trusted to where a dry, airy, healthy situation can be obtained; frequently whitewashing the walls with lime seems to have an influence in removing moisture and keeping them dry. The owner of a damp and uncomfortable stable often wonders why so many of his horses catch cold; "there are always some of them coughing." Now, if he were to make that stable his abode for four-and-twenty hours. he would have but little to wonder at. Large stables are objectionable, and have nothing to recommend them but cheapness in the erection, so that when it is more important to have a cheap than a healthy stable, a large one may be indulged in;

the saving in the end, however, may eventually prove a loss, if the builder of the stable be the owner of the horses. A very large stable cannot easily be ventilated; it requires a lofty roof to give any degree of purity, and contagious diseases once introduced into such, spread rapidly and do extensive mischief before they can be checked."

REMARKS ON GREENSWARD, ORCHARD GRASS, AND OTHER GRASSES.

For the Farmers' Register.

Since I became a farmer, my observation has brought me to the conclusion, that many lands on the Eastern Shore were well adapted to grazing. The diminution of our black population, by the purchases of the south-western speculators, and the fear of being sold, which has occasioned many a poor fellow to fly to the free states, has produced with us a serious want of labor, which, as far as it has been tried, has not been well supplied by the Germans who have come into this part of the country. Before they suit us, and we suit them, we must come down a little more to the practical habits of liberty and equality. My views have led me to inquire into the different species of grass which grow in the different regions of our extensive country; and I was much pleased with the paper of Mr. Stevenson on the blue grass of Kentucky, of which I had heard, but of which I had very imperfect information. Mr. Stevenson suggests that the greensward grass, or yard grass of Virginia, is the blue grass of Kentucky. In the same situations, we have the same grass. By referring to the 7th volume of the Farmers' Register, page 20, some account will be found of the Pennsylvania green grass, which I have no doubt is the blue grass of Kentucky, and the greensward of Virginia and Maryland. As some of your readers may not find it convenient to turn to the volume, which is now before me, I will give consisely the statement, premising that General Evans, from whom I obtained the information, is an old farmer, and very intelligent and observant. He stated that he well remembered when what we call blue grass in Maryland, rooted out their red clover, which is now succeeded by green grass. They esteem it their best grazing, and cut it for hay, though it does not afford so abundant a crop as orchard grass or timothy. It is a hardy plant, and I saw it in luxuriant growth in the month of November, after the heavy drought of 1838, and I am inclined to think it will resist the frost as well as orchard grass. I entertain no doubt, but the green grass, on General Evans' farm, was the result of lime and putrescent manure. Certain sections of Chester county abound in lime-stone, but on his farm there was none, and there was much sand in the soil, mixed with slate. I had a lot which I improved well seven years ago with marl and putrescent manures, which I have once since dressed with some manure from my stables and cow yard. It was sown in orchard grass. I have taken a crop of hay from it every year, and sometimes two. The orchard grass is running out in part of it, and it is succeeded by green grass.

I concur with Mr. Stevenson, if the lands of Virginia be well improved by marl and putrescent manure, and I add those of Maryland, they will produce what is called green grass in Pennsylvania, and blue grass in Kentucky. I believe they will require neither sowing or setting. I rely upon fact, and leave the causes to philosophers and geologists. "*Felix qui rerum potuit cognoscere causas.*" General Evans saw the appearance of green grass in his fields, which drove out the fibrous blue grass, and no seed were sown. None was sown in my lot, and, I infer, none on Mr. Ruffin's fields * My speculation is, that where a great alteration occurs in the soil, whether from natural or artificial causes, a modification takes place in some productions of the earth. In support of this, I will state another fact. When my father built his house, where I now reside, more than sixty years ago, his good taste, contrary to the usages of the times, induced him to spare a contiguous wood. To improve the vegetation, I have carried some marl on it, and wherever it has been spread, white clover has sprung up so thick as to expel the sour grasses of the forest. I cannot believe that the seed was carried there by the birds of the air or the winds of heaven, and exposed to heat, cold, and moisture, retained their vegetative power till called into action by the marl.

Mr. Stevenson supposes, that the Kentuckians would be willing to swap their "devil's bit" for Virginia blue grass. I do not know how the proposal will be accepted in Virginia, but I would not agree to it on the part of Maryland. Our blue grass, though a sore pest in our wheat and corn fields, affords good grazing in lack of better. Though the devil's bit is a hard name, I will agree on the part of Maryland to take it in full exchange of St. John's wort, Richardson pink, spear plantain, and a few Canada thistles.

I apprehend the great fertility of Kenkucky is founded in its calcareous soil. Lime corrects acidity, and, according to Mr. Ruffin's theory, gives permanency to putrescent manures. The falling of the leaves, and the decaying vegetables in combination with the lime, make rich beds of the manure for ages, whilst undisturbed by the axe or mattock, and when cleared of the underwood, the beautiful blue grass sprang up. Nature has done for Kentucky, what industry has done for Pennsylvania; and which it can do for Virginia and Maryland: and perhaps, in time to come, some erratic Kentuckian may find in Maryland, fields of grass that will remind him of "the glorious pastures" of the Elkhorn Paradise.

Since I wrote the above, I have received the American Farmer of the 30th ultimo, which contains an inquiry from the Kentucky Farmer, in relation to orchard grass, and an answer from the Cincinnati Republican; some parts of which, do not concur with my experience and observation. Orchard grass to me is an important crop; I gather neither blades or tops, and cut no other hay—it constitutes the rack food for my carriage and saddle horses, for my farm horses when they are at work. I feed my calves on it in the winter, and my oxen when I can afford it.

I esteem a strong clay the best soil for orchard grass, so level as to retain the rain which falls, without receiving it from the adjacent lands. The drought of 1838 was abiding and severe, and the part of the lot which I have mentioned, where the orchard grass has been succeeded by green grass,

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*This inference is correct.—Ed. F. R.

was of lighter texture than the rest. The crop on the whole lot was diminished in 1839, but on the strong clay it recovered last year, and I cut a good crop. I sow in March or September, as suits convenience, and have never failed since I sowed seed. None can be depended upon, except the plant be perfectly ripe, and I apprehend the failure of vegetation and the tufting of the plants, are mainly owing to imperfect seed, or sparse sowing. Two and a half bushels to the acre is not too much; I prefer three. Those who sell have strong temptation to gather immature seed; when the plant is ripe, the hay is of no value, and the aftermath much impaired. Orchard grass for hay, ought to be cut and secured when it gets into full bloom. If the weather be fine, it may be cut in the morning, and by the method directed in the 1st volume of the Farmers' Register, page 162, (which I pursue,) put into cocks in the evening, when it will be safe, and may be drawn in at pleasure. The only loss it will sustain, is by absorption at the bottom, if the cock is suffered to remain out a long time. I have never grazed my orchard grass in the spring, but freely after my hay is drawn in till hard frost, removing the hoofs when the ground is saturated by rain; and I have full evidence then of its great value, in rich milk and fine yellow sweet butter. I heard a gentleman say, in whom I have full reliance, that from the first and second crop weighed in the field, after it was cured, he got six tons to the acre. I esteem two tons and a half a good first crop, and do not cut a second if my first be sufficient for my consumption.

The inquiry about orchard grass having come from Kentucky, I have made this addition to my communication, as a small return for Mr. Stevenson's valuable and instructive paper, on the blue grass of Kentucky. WM. CARMICHAEL.

Wye, Queen Ann's county, E. S. Md., Jan. 6th, 1841.

INQUIRIES AND REMARKS ON SALT, AS A MANURE, AND ESPECIALLY FOR COTTON.

"Have you seen a late English work, 'Johnson on Fertilizers,' in which he discusses some recent experiments in that country on salt as a manure? particularly in combination with compost, farm-yard manure or lime. They are so important that I am anxious to see them transcribed into your useful periodical. He is spoken of in the 'Library of Useful Knowledge,' as high authority, and if he is to be credited, salt would be a cheap manure at two dollars a bushel. Besides, he recommends it so highly for destroying weeds, if put on a season in advance of the crop, and for destroying worms and other insects infesting a crop, that I am desirous to see it in print, that experiments may begin extensively through this country. I should not be surprised, from his trials, that a top-dressing of a bushel an acre, sown over cotton in June, should destroy the worm which has so dreadfully consumed our crops in the south. At that season of the crop, the worm is burrowed about six or seven inches deep in holes made in the ground; and he informs us that worms in that situation are certainly destroyed by salt in small quantities thrown over the earth."

The foregoing extract is from the letter of a distinguished southern planter, whose name we are always pleased to present with his communications, whenever not forbidden by his order, as in the present case.

The essay of Johnson on salt as a manure would have been published long ago, but for our want of confidence in his opinions. Upon the desire expressed above, we shall take an early opportunity to publish either Johnson's own article, or his and other opinions on that subject, as given in the 'Farmers' Series' of the 'Library of Useful Knowledge.' The use of salt as manure has been frequently urged, upon the ground of great benefits produced by it in particular cases. It has as often excited the hopes and enlisted the active zeal of some theoretical writers, and again fallen into neglect, because of failures in practice. As a general prrctice, salting land for its fertilization, at any rate of quantity, has not been found advantageous or profitable. But, even if not a general fertilizer, or a fertilizer of soil at all, still it may be highly beneficial as a destroyer of predatory insects, (if taking care not to give so strong a dose as to injure the crop on the land—) and still more probably as a *specific manure*, or food essential for certain crops. This last opinion we have long entertained, and have before expressed it in this journal, as well as have published every known fact on this very important point. Many plants cannot grow except on a salt soil. There is no doubt that salt is a specific manure for asparagus, and there is a good reason to believe that it is also a specific manure for the very important crop, cotton. On the latter head, see articles at page 677, vol. iv, and pages 45 and 46, vol. v. The two first we copied from the 'Southern Agriculturist.' The last, our own (editorial remarks) being short, will here be copied:

"It seems to us that salt must act as a specific manure for cotton, and is essential to produce the fineness of fibre that constitutes the value of the sea-island cotton. As different as are the quality and appearance of this cotton from the green-seed, or short-staple upland cotton, they are but varieties of the same kind, the most valued of which, rapidly runs into the other, by mere change of soil. The one kind is raised, in perfection, only on the low sandy islands on the sea coast of Georgia and South Carolina, and the adjacent shores of the main land. If the seeds (which are naked and black,) are planted in the interior, though but little remote from the sea, the product is what is called the "long-staple Santee," a green-seed cotton, but of longer fibre than the ordinary upland cotton, into which, however, continued planting from the same, finally brings the crop.

It has been supposed that the very sandy nature of the soil of the sea-islands was the cause of the peculiar value of the cotton they bear. But if so, some spots, at least, might be found equally sandy, in the interior of the country, and the same kind

of cotton be there produced successfully. But the accounts we have in the foregoing and other articles of the peculiar value of salt mud and salt grass, as manure for cotton, indicate plainly that salt itself is necessary for the perfection of cotton, and that it is owing to the salt already in the soil of the sea-islands, and the adjacent low coast, that to such narrow limits the production of that valuable variety of cotton has heretofore been confined."

In what manner *specific manures* act upon the plants for which they are either very important or essential, has not been satisfactorily explained in any case. The facts, however, are not the less certain, in the assertained cases; and there may be many other as important cases, which have not yet been observed. Thus carbanate of lime, or some equally serviceable form of combination of lime, and in considerable quantity in the soil, is *essential* to the growth of clover. Gypsum (sulphate of lime) is another *important* specific manure for clover, but not as indispensable to its existence as other forms of lime. The acid of earth, which is a poison to valuable crops, is indispensable food, or a specific manure, for sorrel, poverty grass, and some kinds of pine trees—none of which can live after this acid has been effectually neutralized by manuring with lime. If then, though in a less essential degree, salt is a specific manure for cotton, it may well be that a very small quantity may produce important improvements to that growth, though no other cultivated crop might receive any perceptible benefit from a like application.

ED. F. R.

THE FARMS AND FARMING OF THE RICH LEXINGTON DISTRICT IN KENTUCKY.

The following sketch, by a New Englander, hasty and imperfect as it must necessarily be, presents a picture of this celebrated body of land, more interesting, and perhaps more truly reporting the general appearance, than we have seen before. The cause is, simply, that it was drawn by a stranger to the region, and who of course described what was to a stranger most striking and novel. An old resident of this same district, perfectly well informed in regard to it, and withal a very capable reporter, would probably have made a less interesting and vivid description, because he would have passed over very slightly, and perhaps without proper description, if not without notice, matters which he would suppose too well known to need mentioning, simply because they were so well known to the reporter, and, as he would infer, to every body else. Thus it is, that if the tendency to this fault is not kept continually in view by an agricultural reporter, and carefully guarded against, the very circumstance of intimate knowledge of the subject will cause his description to be meager, uninteresting, and therefore of little worth. On the other hand, a stranger would be liable to the more serious errors growing out of ignorance and misinformation.

We have never seen this highly favored region, but know that none better deserves a full descriptive and agricultural report. If our valued correspondent, Th. B. Stevenson esq. of Frankfort, would undertake to furnish such a report for publication in the Farmers' Register, he would add much to the obligations which this work and its readers already are under to his pen. And whether he might make the report as full as desirable, or merely a general and superficial sketch, still, if he will write it as to readers *totally uninformed* on the subject, he will be sure to make an excellent and valuable article. No agricultural reading is more generally interesting or improving, than reports of particular farms, or farming districts. Very many of our readers, by their acquaintance with some such subjects, could easily prepare such reports, and thereby render most acceptable service to the Farmers' Register, and through it, to the agricultural public. Have we not some readers, and friends and supporters of our work, who will render this desirable and important service?—ED. F. R.

From the Boston Cultivator.

If geography and history had not placed the Eden of the primitive world in eastern climes, you would have sworn this must have been its site. Nature has been lavish here of her bounties in soil, vegetation and climate. For 50 miles around, the land is of the richest alluvial earth, from 5 to 10 feet in depth, resting upon a stratum of limestone. Its surface, at a distance, appears like a vast plain; but entering it, the ground is found rolling like the long swelling undulations of the ocean. The country, every acre of which is as rich as your garden spot,—is divided into extensive plantations of 500 to 2000 acres, each with its farm-house, and its negro cabins clustering around it, placed in the centre, remote from the highway, surrounded by a grove, broad avenues lined with trees leading to it.

Col. Clay, of Fayette county, has an estate containing upwards of 6000 acres, most of which is devoted to pasturage, and he sold in 1839, I was informed, upwards of $30,000 worth of cattle upon the hoof, a part of which were driven to the New York and Brighton markets.

Many districts in this rich grazing country present the anomalous condition of a country increasing rapidly in wealth, and advancing in improvements, while decreasing in population. The reason of this singular state of affairs is, that the small farmers are selling their circumscribed farms to the wealthy graziers, who are monopolizing the lands in their vicinity. This was peculiarly the course of events in 1836 to 1838, while beef

and stock commanded exorbitant prices; the low prices of beef for a year or two past, have, however, arrested the tendency to accumulate the lands of a few large proprietors.

Corn and rye fields are planted and sown here for the purpose of feeding cattle upon them, standing in the field. Rye is never gathered for domestic use, and it strikes an eastern man as a most wasteful and improvident mode of farming, to turn a herd of cattle into a rich and ripened field of grain to feed upon and trample it under their feet, and when they have feasted and gorged themselves upon it for a few days, the swine are let in to gather up the scattered and mutilated remains of the harvest.

The farmers in the vicinity of Lexington possess now the finest breed of cattle in the world. For many years large sums have been paid, and much care and labor incurred by them, to procure the best specimens of English stock. Agents have annually been sent to England to purchase, without regard to cost, the choicest bulls and cows of the most famous breeds. These being transferred to the luxuriant pastures and genial clime of Kentucky, their offspring improve in all their characteristic points of excellence and surpass their progenitors in size and beauty. I saw yesterday, heifers three years old, that would weigh fifteen hundred pounds, and which were the most perfect models of beauty; and their calves of this season, now four or five months old, would weigh down an ordinary cow of full growth, and these lusty fellows were bleating after their dams and tugging away at the teat like young sucklings; for here cows are not kept for milk, but to raise calves; and no butter and cheese are made upon these large stock farms for the market.

The rearing of horses and mules is also a source of great profit, and the echo is awakened through the sylvan pastures by the perpetual bray of the stultified ass, and the neighing of the prancing blood horse, which, like the beeves, being kept principally for breeding, are seldom subjected to the bit and harness, and in their wild freedom they start at the sound of strange footsteps, snuff the air, and bound off in the unrestrained liberty of the untamed prairie horse. From twenty to fifty horses are kept upon the large estates, and usually as many mules. A few days since, upon the rich bottoms of the Scioto, near Columbus, I saw upwards of 300 mules grazing in one pasture.

In a country where pork is so important a staple of production, it would be supposed that great care would be given to procure the best breed of swine; but the long-snouted, lank and slab-sided race, seen running wild in large herds through the woods, exhibit an astonishing indifference in their owners to the improvement of this description of stock.

* * * * * * *

There is no class of men who enjoy a greater freedom from the cares, anxieties and labors of life than the planters of this fertile region. They are the princes of the land—free from debt, living in the enjoyment of princely incomes, and upon estates, some of which almost equal a small German principality in territory.

AGRICULTURAL SOCIETIES.

A friend, for whose opinion we entertain great respect, writes as follows:

December 3rd, 1840.

"I do not exactly agree with you, in your dislike to agricultural societies and all their works. I think there are many persons, who, like myself, need such an institution, to make them write. You may, perhaps, have observed many who never displayed any energy, unless when placed somewhat under the control of others. They make good public officers, that is, attentive ones, while they are certain to neglect their own business. Such persons will write "by order of the society," when they never could be induced to do it, on their own responsibility. If there were many societies formed, for the purpose of collecting and diffusing information, and suitable committees of revision and publication appointed, so as to throw the odium of rejection from you, the Register might soon be *deluged* with matter."

As it is our misfortune, or the effect of our fault, to be frequently misunderstood, we should not have been much surprised at the above construction, by a more slight and careless remarker. But we are greatly surprised that an inference so different from our intention, should be drawn by one who we know attentively reads and highly values our publication. We are very far from entertaining "dislike to agricultural societies and *all their works*." It is not for their *works*, but their *no-works*, that we value many of them at a low rate. *Really working* agricultural societies would be of incalculable value to agricultural improvement—and, directly or indirectly, we have expressed that opinion again and again in the Farmers' Register, and urged the establishment of such societies with all our power. And every *work* performed by one, every experiment made, every communication of practical instruction sent forth by any of our agricultural societies, we always heartily welcome, and are sure to publish. But our friend must know that such *works* are among the smallest and rarest operations of agricultural societies in general. All that they do, in any of the various modes of ascertaining and establishing truths, making experiments, collecting facts, and diffusing information on agriculture, is excellent—and if our friend will use his zeal and influence to increase such good fruits, he will find us equally zealous to extend their circulation through the Farmers' Register, and thereby multiply the good effects. In all such things, the existing agricultural societies, and all that may be established, will find no more hearty approver of, and zealous and efficient aid to their labors, than the Farmer's Register.

INOCULATING.

To the Editor of the Farmers' Register.

Being somewhat dextrous in inoculating trees, and wishing to ascertain whether the process of

grafting or budding would (as is commonly supposed) prevent the growth of thorns on trees disposed to bear them, I inoculated a young honey-locust tree with two buds, one from the extreme end of a limb of an old tree, the other from a thorny little limb of its own, near the ground. The first of these had no spines, the other was very full of them. From this experiment, I infer, 1st, that grafting and budding have no influence on the propensity of trees to bear thorns; secondly, that certain trees seem, by nature, to be provided with spines about the body and lower limbs, to protect them from being barked or otherwise injured, and possibly, to protect their fruit from vermin. Among the fruit-bearing limbs, however, there is no need of thorns, and if buds or twigs are procured from these, for ingrafting on seedlings, the trees thus produced are free of thorns.

ROOT FEEDING.

To the Editor of the Farmers' Register.

King William, Jan. 20th, 1841.

Do urge on your readers the importance to them of going more largely into the root crop this year. I, together with several of my neighbors, cultivated last year several acres of them, sugar beet, mangel wurtzel, and ruta baga, and succeeded well. We all give the decided preference to the sugar beet as food for milch cows. The butter and milk are rich and fine, but we have not as yet made any accurate experiments in feeding them. My overseer brought a cow with him to my house about Christmas, which he informs me was fed plentifully upon short corn and fodder all last fall and winter up to the time she came here, and since his removal, she has eaten nothing but about three pecks of sugar beet per day, and the usual long food; and upon this feed has doubled, and more, the quantity of milk, besides a considerable improvement in quality. I feed once a day on steamed roots, and once on raw, and am not prepared to say which is best, as they are greedily eaten whether cooked or raw.

We are getting in a stock of the far famed Berkshire hogs hereabout, and are well satisfied with them as far as our acquaintance extends; I have owned a pair about eighteen months, and have readily sold all the pigs I could spare at good prices.

COMPARATIVE VALUE OF THE COCOONS OF THE "TWO CROP WHITE" SILK-WORMS, AND OTHER VARIETIES.

For the Farmers' Register.

Stafford Co. Va., Jan. 25th, 1841.

I have recently made numerous experiments in reeling cocoons produced by the "two-crop white," and "mammoth sulphur" silk-worms, from which I have ascertained that the former yielded on an average, from cocoons of fair quality, 8 ounces of reeled silk to the bushel, and the latter 14 ounces. These facts lead me to change the favorable opinion hitherto entertained of the "two-crop white." I am now convinced that they will bring the culturist in debt who operates with *hired* labor, while the sulphur and other good varieties will show a handsome profit.

The comparative value of the varieties above named may be stated thus:

Cost of producing one bushel "two-crop" cocoons,	$2 00
Reeling the same,	1 50
	$3 50
Deduct eight ounces raw silk,	2 67
Loss,	0 83
Cost of producing one bushel sulphur cocoons,	$2 00
Cost of reeling,	75
	$2 75
Fourteen ounces raw silk,	4 67
Profit,	$1 92

The pea-nut silk-worm is said to yield on an average sixteen ounces of silk to the bushel, but, as yet, my experiments with this kind, have not been made on a scale large enough to form accurate conclusions.

The above named facts, however, show that the success of silk-culture in Virginia, and throughout the union, may depend on the varieties of silk-worms selected.

Respectfully your's,

LAYTON Y. ATKINS.

KENTUCKY BLUE GRASS SUPPOSED NOT TO BE THE SAME WITH GREEN SWARD. GRASSES FAVORED BY CALCAREOUS SOIL. MELILOT.

December 5th, 1840.

I have just received the November number of the Register, and find it asserted, that Kentucky blue grass is identical with *poa viridis*, or our common greensward. Now, personally, I pretend to know nothing about this matter; but a gentleman in this vicinity, well qualified to judge in the case, declared to me some time ago, that *he knew* they were not the same. He said, at the same time, something about the flower-stem of the Kentucky blue grass being jointed, and that there were, occasionally, some bunches of it to be found on the banks of the Appomattox. He was speaking of the blue grass of our lime-stone valley, where he has resided much, and, doubtless, this is the same blue grass with that of Kentucky. I mention this not for publication, but to prevent your hastily settling the question, as I find in a note to S. D. Martin's communication to the Southern Cultivator, you set down Kentucky blue grass as "green sward." The *poa viridis* [or poa pratensis] is certainly an American grass, and so much resembling that called "blue grass" beyond the Blue Ridge, that it must take a botanist to say, whether they be not the same. Our "blue grass," *poa compressa*, has a flattened flower stem, and is really *blue*. I think the subject important, and that possibly, on particular investigation, you will find the western blue grass another indigenous American grass, closely allied to the greensward.

Among the many benefits to your tide-water region, in the commencing agricultural era, from

the use of marl, those from the cultivation of grasses promise much. I am convinced, that without calcareous manures, grass cannot, on a large scale, be cultivated profitably, except on strong neutral soils. There are fine grasses already known and cultivated in various parts of the world. It is probable, however, that many more are still to be discovered; particularly, such as are adapted to the peculiar climate and soils of the United States. In this neighborhood, about the sites of old settlements, which have been rendered calcareous by ashes, the common melilot, a large species of trefoil, grows with amazing luxuriance. It has been considered a nuisance, and unavailing attempts have been made to exterminate it. I found some of it on this farm when I took possession; and observing that the crops, of wheat and tobacco, following it, were astonishingly productive, and, moreover, that I could easily, when necessary, turn it under my large Clute and Reagle's ploughs, I have carefully cherished it, and have sown some six or eight bushels of seed. But, to my mortification, I find that it will not grow on other than calcareous lands. May I recommend a small trial of it to you on marled land? I can assure you, that the crops of wheat and tobacco, on the site of its growth, without any additional manure, surpass those on surrounding lands which are heavily manured. It affords fine grazing for cows and sheep in winter. I have some exhausted second low-grounds, in which may occasionally be seen some small calcareous nodules, and about eighteen inches beneath the surface, is a stratum of clay marl, an inch or two in thickness, lying on, what appears to be, mouldered horneblende rock. I sowed some melilot seed on this ground last winter; and though the land is so poor, that before, it would not produce even poverty grass, and nothing else but a very diminutive white clover, I found that the melilot seed vegetated, and grew quite well all the summer. I hope you will hear from it again.

INQUIRIES AND REMARKS UPON THE CALCAREOUS ROCK AND SOILS OF SOUTH ALABAMA.

For the Farmers' Register.

Claiborne, Monroe Co., Oct. Jan. 7th, 1841.

I will now add a few lines on a subject of deep interest, and one likely to engage attention in this region of country, at no very distant period, the subject of marl or calcareous manures. Not many years since, a Mr. McGuire wrote a treatise on the geological formation of South Alabama, which appeared in Professor Silliman's 'Journal of Science.' He describes a rock of limestone formation, abounding in the counties of Monroe, Clark, Washington, and Marengo, which he had seen quarried, and when dried, was extensively used in building chimneys. This rock lines the sides of the creeks and branches in my neighborhood, and is composed, (apparently,) of innumerable small shells and sand, united into a cement. Masons, in building chimneys, use the scrapings or shavings in mortar, and it seems to answer almost as well as lime. In fact, but for the action of fire, which gradually decomposes the back of the fire-place, the chimneys last remarkably well. There are some of twenty years' standing, and they look neat, and when merely white-washed, resemble marble. Some of my neighbors have used the *shavings* as manure, and describe its action as resembling marl. For instance, there is little or no benefit perceptible the first year; but the next, and succeeding, the soil deepens, becomes dark, and loose, or stiff, (as clay or sand prevails,) resists drought, or the intense heat of our summers; and these qualities are the more conspicious by the deep rich green of the vegetables growing in such soil. I am no chemist, and have not the means of ascertaining the component parts of this rock; but what *proportion* or *per cent.* of lime is necessary to form *cement* resembling rock? A rapid and powerful effervescence takes place when vinegar is added to it; and would not this be the case with the *carbonate of magnesia* as well as of *lime?* In the vicinity of creeks or branches, whose sides are walled with this rock, *mounds* of lime-stone rock of every imaginable shape or size, are to be seen, which, when broken into fragments and burnt, makes excellent lime for mortar or coarse plastering; and would not this make *manure?* Manuring has been entirely neglected in South Alabama for the obvious reason that lands have been abundant and cheap; and for the same reason, the most exhausting and careless cultivation have greatly impaired the fertility and productiveness of our richest soils. Emigration, that once threatened to depopulate the old states, has already commenced here; and Texas, already the receptacle of some of our best citizens, is often spoken of, as the *Ultima Thule* of wealth, ease, and luxuriant indulgence.

LORENZO JAMES.

The foreging letter, proceeding as it evidently does from an observing and inquiring mind, is a striking illustration of the great existing difficulties of diffusing agricultural facts and knowledge, even after they have been laboriously gathered, and published; and of the immense loss of value suffered by a vast region of our country, in consequence of ignorance of such facts and instruction.

Our correspondent is but a recent subscriber to the Farmers' Register, or he would have known that, throughout the work, and especially in the earlier volumes, much attention was paid to the investigation of the remarkable calcareous soils of an extensive region of Alabama and other south-western states. The article to which he refers, by Mr. McGuire, was there re-published, and many more from correspondents, as well as our own elaborate essay 'On the formation of Prairies,' in vol 3. The latter, as well as several copies of the 'Essay on Calcareous Manures,' for gratuitous distribution, where they may render service, we have sent to our correspondent. He will there see that all his suppositions expressed above, as to the action and value of the rich marl, or "rotten lime-stone," of South Aabama, are correct, and he will correctly infer, from all the facts, and the general reasoning, that by a proper practical application of the theory of the action of calcareous

manures to his singular region, that many of his countrymen might make more profit at home, by retaining, or even increasing, the early fertility of their lands, then by destroying their productiveness, and then seeking new lands in Texas.

All of the soft calcareous rock, to which our correspondent refers, and which forms the subsoil, and sometimes the upper soil, of the greater part of the lands of several counties in Alabama, is very rich, judging from the specimens which we have analyzed—probably, seldom less than 70 parts in 100 of pure carbanate of lime. That degree would be enough to make good lime (by burning) for cement, or for manure—and better for both, of course, if richer, as doubtless it is often. But, if it crumbles by exposure, or can be coarsely pounded, more cheaply than to calcine it, no burning is needed to prepare it for manure.

The practical use of calcareous earth, as manure, would, of course, be very different, in general, in Alabama, when it is so often in excess, from lower Virginia, where it is almost universally deficient. But the knowledge of the theory of its action is not, therefore, the less important to be known, and kept constantly in view by the cultivator. It will teach how to guard against the evils of an exclusively calcareous soil, as well as those of acid soils; and to the cultivators of rich virgin and *excessively* calcareous soils, in South Alabama, Arkansas, and even in Texas, the Paradise of land-thieves and land-killers, it offers the choice of retaining, or even increasing the virgin fertility, or of finally reducing the lands to the present sterile condition of Judea, or of the high lands of Egypt, both of which are highly calcareous, and formerly also highly fertile.

Our correspondent is right in supposing that the carbonate of magnesia, if present in the soft rock, would show similar efferversence. But a practised eye would detect a difference, (if there was much magnesia, compared to the lime,) by the slower effervescence of magnesia. But there is little ground to fear the *hurtful* presence of magnesia. We have never known of its presence, (in any quantity worth notice, if at all,) in any marl, or rock, of shelly origin. The marls of South Carolina, which Dr. Joseph Johnson analyzed, and reported as containing a large proportion of magnesia, seemed a remarkable contradiction of this our long entertained opinion, as well as a very interesting fact in itself. But, we learned from that gentleman, in a recent personal interview, that he had been mistaken in his supposition of the presence of magnesia in those marls, as he had subsequently ascertained by subjecting his process to a more rigorous test.

Though calcareous matter may be generally excessive on the "bald prairies" or "rotten limestone" lands of Alabama, still many localities of "sandy-lands," are interlocked with the calcareous, need much to be marled, and could be very cheaply covered. Indeed, as we have heard the relative positions and qualities of these different kinds of land described, (for we have never seen them, except in specimens for analyzing,) each of these soils would be the best manure for the other; and a cart in making trips of (sometimes) not 100 yards in length, could take loads both ways; putting calcareous earth on the sandy and acid soil, and sandy soil to lesson the excess of calcareous matter in the other.—Ed. F. R.

REMARKS ON THE SUPPOSED DISCOVERY OF THE HESSIAN FLY.

From the Farmers' Cabinet.

Discovery believed to have been made in relation to the Hessian fly. Complied for the Farmers' Cabinet, by Benjamin H. Coates, M. D.

A paper presented to the American Philosophical Society by Miss Margaretta H. Morris, of Germantown, and relating to the above-mentioned subject, was subsequently ordered by that body to be published in their Transactions. As, however, some time will elapse before the appearance of the number of the Transactions which will contain her paper, we have thought that we could better serve the agricultural readers of the Cabinet by extracting the information given in a journal recently authorized by the Society to be published by its Secretaries, in an abridged form and of earlier appearance. In the "Proceedings" just printed for November and December, 1840, we find the subject mentioned, in some paragraphs of which we here subjoin a copy.

"The committee, consisting of Mr. Nuttall, Mr. Lea, and Dr. Coates, to whom was referred a communication by Miss Margaretta H. Morris, on the cecidomyia destructor or Hessian fly, reported in favor of publication, which was ordered accordingly.

"The committee express the opinion, that should the observations of Miss Morris be ultimately proved correct, they will eventuate in considerable benefit to the agricultural community, and, through it, to the public. Miss Morris believes she has established, that the ovum of this destructive insect is deposited by the parent in the seed of the wheat, and not, as previously supposed, in the stalk or culm. She has watched the progress of the animal since June, 1836, and has satisfied herself that she has frequently seen the larva within the seed. She has also detected the larva, at various stages of its progress, from the seed to between the body of the stalk and the sheath of the leaves. In the latter situation it passes into the pupa or 'flax-seed state.' According to the observations of Miss Morris, the recently hatched larva penetrates to the centre of the straw, where it may be found of a pale greenish-white semi-transparent appearance, in

form somewhat resembling a silk-worm. From one to six of these have been found at various heights, from the seed to the third joint. They would seem to enter the pupa state about the beginning of June.

"This fly was not observed by Miss Morris to inhabit any other plant than wheat.

"To prevent the ravages of this destroyer of the grain, it will be proper to obtain fresh seed from localities in which the fly has not made its appearance. By this means the crop of the following year will be uninjured; but in order to avoid the introduction of straggling insects of the kind from adjacent fields, it is requisite that a whole neighborhood should persevere in this precaution for two or more years in succession. This result was obtained, in part, in the course of trials made by Mr. Kirk, of Bucks County, Pa, with some seed-wheat from the Mediterranean, in and since the year 1837. His first crop was free from the fly, but it was gradually introduced from adjacent fields; and in the present year the mischief has been considerable. As Miss Morris states that the fly has never made its appearance in Susquehanna and Bradford counties, seed-wheat free from the fly, might be obtained from these and probably from other localities.

"The committee recommend that the conclusions of Miss Morris 'may be subjected to the only efficient test—repeated observations and effective trials of the precaution she advises.'"

Believing the above to be an observation of very considerable importance, and sincerely hoping that repeated trials and examinations may confirm its correctness, we have prepared the present notice for the Cabinet, in order to bring it before the agricultural community.

Miss Morris's observations and inferences agree very well with what we know of the habits of many insects. Thus they are, as a general rule, not produced till their food is ready for them; while their eggs appear to approach the seeds of plants in the power of enduring long delay and some violence, before they lose their vitality and faculty of developement. The eggs of silk-worms are kept for various periods, and still retain the susceptibility of being hatched. How long this power, in some insects, may be capable of enduring, has not been ascertained; but the presumption arising from their analogy to seeds leaves it by no means certain, (until observations are made,) that the period may not be one of magnitude. The lower animals are said by naturalists to approach, in constitution, much more nearly to vegetables than to the more complex beings of their own class; and this is acknowledged to be strikingly exemplified in the instance we have been reciting. Something analogous may be perceived in the instance of the common fowl; in which species, the eggs first laid are allowed to remain till enough are accumulated for the parent to commence setting, and without, in any way injuring the product.

That highly and justly distinguished American naturalist, the late Thomas Say, has left us an entomological description of the Hessian fly, in the first volume of the Journal of the Philadelphia Academy of Natural Sciences. He appears never to have identified the insect in an earlier portion of its life than the flax-seed state. Thus, he describes the *larva*, first state or "maggot" of the animal, as resembling the *pupa* or second state, except in the dark, reddish-brown color of the latter; and alleges that, "when taken from the culm, it is almost inert, exhibiting very little motion to the eye." The was in 1817; and as that eminent writer was principally occupied in the task, then new, of describing and classifying American insects in their perfect forms, it is entirely credible that he might have erred in relation to their earlier stages; nor is it wonderful that, in 23 years, further discoveries should be made, and his account corrected. What Mr. Say calls the larva, will, if Miss Morris be correct, be considered the early period of the pupa.

The discovery of Miss Morris, then, appears principally to resolve itself into the fact of the egg being deposited in the seed; and into the history of the pale green worm or larva, as the primary stage of the animal's existence. The account of its periodical change given by Mr. Say is confessedly conjectural; and insufficiently explains the preservation of the species through the winter. His words are, "The history of the changes of this insect is probably briefly this." He then proceeds to describe the parent insect in depositing its eggs within the sheath of the leaves, near the root of the plant, the fixed mode of life of the flax-seed substance, together with the indentations produced in the straw, the distortion of the flax-seed worm when crowded, and the death of the plant. He then adds the following notice, which ends the recital. "The perfect fly appears early in June, lives but a short time, deposits its eggs, and dies—the insects from these eggs complete the history by preparing for the winter brood." The words would seem to imply that there are *two* broods of these flies; one for summer and one for winter. If "preparing for the winter brood," means laying the eggs which are to produce them, why are not the flies seen in the end of October; before which time the sheaths of the leaves and the straw itself of the winter wheat do not exist, and at which period no fly of any description is to be met with in the fields? If, on the other hand, "the insects from the eggs laid in June," are *themselves* "the winter brood," they are to be found in the stubble after harvest; and cannot possibly be the same individuals that are found next spring in the damaged stalks of the new crop.

According to the facts believed to be ascertained by Miss Morris, the difficulty at once disappears. The fly lives only ten days; during which time it deposites its eggs. The eggs remain unaltered till the wheat sprouts; and the young worm is then below the surface of the earth, in a substance which is not frozen, and which supplies him with food.

The residence of the worm, as described by Miss Morris, within the hollow of the straw, is precisely like that of certain other insects. The animal that destroys the more luxuriant shoots of the parsley-leaved elder, and which, in its perfect state, becomes, as we are informed, a beetle of splendid coloring, passes its larva-existence within the pith of the plant. Additional examples, we believe, are not difficult to be obtained.

To the directions given in the "proceedings" for avoiding the production of this pernicious insect, little seems necessary to be added. We are inclined, however, earnestly to repeat the

recommendations of further trial and observation. It would seem that the farmer who uses seed-wheat from a district ravaged by this animal, actually commits the absurdity, of *planting Hessian flies* for the benefit of this next year's crop!

The precise period at which the minute green worm escapes from the hollow of the straw, to repose and undergo its subsequent changes beneath the sheath of the leaf, is not ascertained with accuracy; and may furnish a question for investigation. We are informed that Miss Morris is continuing her observations on growing wheat; in which she will probably ascertain the fact. It is in the power of our readers to confirm or reject her conclusions, both in this and in what she regards as already established.

The observations above stated may perhaps amount to stronger confirmation of the position assumed than had before appeared; but certainly they do not constitute a "new discovery," or present the opinion advocated for the first time. Besides other less public supporters (within our knowledge) of the opinion that the eggs of the Hessian fly are deposited on, and sown within the grains of wheat, there were three several articles maintaining the doctrine, in the first volume of the Farmers' Register, (See pages 351, 723 and 724.) But though the views of Miss Morris have not the merit claimed for them, of originality, they will be sufficiently valuable to the public, and honorable to her, if affording *confirmation* of an old opinion, heretofore deemed by us, and most other reflecting or observing persons, as entirely erroneous.

But incredulity on this head does not forbid an earnest desire to be convinced that the opinion of Miss Morris is right, and that ours, (that the egg is deposited on the blade, after the coming up of the wheat,) is wrong. Therefore we present this new reiteration of an old and before discredited opinion—and recommend to all wheat-growers to try experiments in various ways to test the truth of the opinion. This may be easily done; and a few careful and accurate experiments, in one season, may either overthrow or establish this opinion, which, if indeed true, would furnish the readily available means of saving millions of dollars every year to the wheat-growing region of this country. Besides the remedy named above, of obtaining seed from uninfected districts, there might certainly be found some easy means to disinfect our own seed—that is, to kill the eggs of the fly, by some exposure that would not affect the vitality of the grain. That would be all that would be requisite to remove totally all future evil from this heretofore destructive source. Either the keeping seed wheat for a year or more before sowing—or exposing it to unusual degrees of heat, or cold—or to certain acrid steeps—might serve the purpose desired. We know of two farmers in our own former neighborhood who held the opinion that the eggs were laid on the grain, and who supposed that they had proved by full experiment the certain means of destroying the eggs on the grain, and thus avoiding all damage from the fly. One of these gentlemen relied on steeping the seed in salt water, and drying in quick-lime, (as for smut,) and the other poured boiling water over his seed wheat. Each of them fully confided in his means of prevention, from a time; but after a few years, both were satisfied of their mistake, by their own later experience.

But, still, we repeat, let experiments be again and fairly tried. There are few subjects, in which both animal and vegetable reproduction are concerned, which are more capable than this of being subjected to strict and accurate experiment. One obvious mode of experiment, would be to sprout grains of wheat on soil in a glass vessel, covered with gauze too close to admit the Hessian fly, or a small gnat. If the maggots (or larvæ) should be nevertheless found on the spires of wheat, (and we have heard such a fact asserted,) it would be at least one strong proof in support of the new doctrine. And if no maggots were produced, under circumstances otherwise entirely favorable to their production, it would be at least strong confirmation of the opposite opinion. In addition, other parcels of seed might be subjected to various steeps, or kinds of exposure, and then sown, both in open air, and in places from which the fly shall be excluded by coverings of gauze.

It would not cost as much labor as has already been used in writing in support of this new doctrine, to prove its truth or its falsehood, beyond all dispute. Perhaps a greater amount of experimental labor, scientifically and carefully directed, might ascertain the true source of the evil, and its certain remedy. It would be well (if disposed to do *any thing* for the benefit or relief of agriculture) for each wheat-growing state to offer a large and permanent premium for this discovery. If Virginia had offered and reserved for this valuable object, the eight or ten thousand dollars annually thrown away on the *geological survey* of the state, we would have at least saved all that has been given to support that *job*; and if the premiums had been earned by the discovery sought, the gain to the agriculture of our country would have been incalculably greater than the reward paid for it, enormous as the sum would be deemed if it had been directed to that truly valuable object, instead of to its actual and comparatively worthless direction.—Ed. F. R.

AGE OF TREES.

Some of the cedars of Mount Lebanon, measured in 1660, by Maundrell and Pocock, were

found to have been nearly 800 years old—the English yew trees of Fontaine Abbey, in the county of York, had survived 12 centuries, those in the churchyard of Crowhurst, in Surrey, 1400 years—that of Fotheringill, in Scotland, from 2500 to 2600—that of Braburn, in Kent, 3000. These travellers describe two other trees of a most remarkable character, the Baobab, estimated to be 5150 years old, and the cypress of Taxodium, in Mexico, 117 feet 10 inches circumference, still more aged. A sycamore near the ruins of Heliopolis, according to the tradition in Egypt, existed before the visit of Joseph and Mary, and they sat under its shadow and drank water from a neighboring well. Another of the same species, termed the sycamore of the Bosphorus, and computed to have been 4020 years old, has disappeared, leaving ten sprouts which sprang from the stump; one of which being measured, was found to be 1050 years of age; and it is possible others equally old have been destroyed, and that the present trees are the second remove from the parent stock. The celebrated chestnut of Mount Etna, 2660 years old, grew from the stump of a felled tree.

In America, more than a hundred and forty different species of trees attain an elevation of thirty feet and upwards; while in Europe only thirty-seven grow to that height, but eighteen of which enter into the composition of forests, and only seven are employed for domestic or maritime purposes. There are stated to be 53 species of the oak, in North America, 17 of the pine, and 8 of the maple. We have 11 species of the walnut, while not one is indigenous to Europe, the variety commonly cultivated there being a native of Persia.

MANURE FOR COTTON.

From the (Cheraw) Farmers' Gazette.

Having read a piece in the Gazette headed "Profit of Manure," three or four weeks ago, showing the value of manure for making cotton, I have concluded to give you another instance. The instance to which I refer, is that of a planter in the Pee Dee country, with whose manner of planting I first became acquainted in 1834. He planted that year one hundred and fifty-five acres, and manured twenty-five or thirty. He gathered eighty thousand pounds of seed cotton. At the close of that year, he determined to make more manure than he had hitherto done, and for that purpose took three old negroes of little value for any thing else.* But his manure being all put on his corn land, he made in 1835, only sixty-five thousand pounds of seed cotton. The number of acres planted was one hundred and forty-seven. In 1836 he planted one hundred and thirty-five acres in cotton, (twenty less than in 1834) manured eighty acres, and made eighty-two thousand pounds of seed cotton, (two thousand more than in 1834.) The same year he manured twenty-five acres of corn land. In 1837 he planted in cotton one hundred and seventy acres, of which he manured only thirty-three acres, putting his manure on the corn land. He made ninety-three thousand pounds of seed cotton. On the thirty-three acres manured, he made twenty-nine thousand six hundred and eighty pounds. Finding his manured land planted in cotton do so well in 1837, he determined in 1838 to plant no more than he could manure. He that year manured and planted 125 acres, from which he gathered one hundred and six thousand, four hundred and fifty-two pounds of seed cotton. In 1839 he planted one hundred and twenty-five acres, manured nearly all, and made one hundred and six thousand, five hundred and eighty-seven pounds of seed cotton. The present year 1840) he planted one hundred and twenty-three acres; manured the whole. Product ninety one thousand four hundred and ninety one pounds seed cotton. Notwithstanding that the past has been a very unfavorable season for cotton, part of a field which been planted in cotton three years in succession, produced one thousand pounds to the acre.

December 26, 1840. AN EYE WITNESS.

* Lest this sentence should mislead some northern *philanthropist*, we state for explanation that the three old negroes were not used *for manure*, but as laborers to collect manure.—ED. F. R.

MONTHLY COMMERCIAL REPORT.

For the Farmers' Register.

The most prominent change in commercial affairs since the commencement of the year, is the resumption of specie payments by the banks of Pennsylvania and Delaware. It was expected that those of Maryland would have made a simultaneous movement. They, however, threw the *onus* of protracted suspension on the banks of Virginia, which was promptly repelled by the latter, who declared their readiness to waive the privilege given by law, and to resume at the earliest day the Baltimore banks would name. The result is, resumption in both states on the 1st of February. North Carolina declares (inofficially) her readiness to do the same, and no doubt will. South Carolina resumed some time since, and the law of Georgia is imperative in her banks, so that in all the Atlantic states, specie will very soon be current. What course will be adopted by the banks of the western states, remains to be seen, but apprehensions are entertained, that they will not follow the example.

Tobacco commands better prices in our markets than it did a few weeks ago; the demand is chiefly for home use, which is increased by the extension of our factories, while the supply has been moderate, owing to the prevalence of wet weather during the greater part of this month. Sales range from $4 to 8½. There has been no improvement in European markets. France obtained so large a supply last year, in anticipation of a war, that she will require none during the present; consequently, a greater proportion of the crop will be shipped to British and other markets. Kentucky and Missouri tobacco, particularly stemmed, is annually superceding that of Virginia; but the increased operations of our manufacturers may counterbalance this.

Cotton has gradually advanced in prices, under the impression that the crop of the past year will be small, compared with the preceding one; but as very large stocks, both of the raw material and of the manufactured article are held in all European markets, and as any considerable advance in price would diminish the consumption, it is not probable that present rates will be much exceeded.

Our market ranges from 9 to 10½ cents; New Orleans, 8 to 12. The total receipts up to this time, are not much short of last year's; nor is the export to England materially diminished; to France, however, it has fallen off considerably. The war between Great Britain and China may cause a large importation of East India cotton into British ports, which formerly found a market in China.

Supplies of wheat in Virginia have nearly ceased. In our northern ports the prices range from 80 to 100 cents. Flour, $4½ to 5. The quantity received from the north-western states is immense. For example—there passed the Erie Canal at Buffalo,

In 1839, 288.165 bbls. flour, and 965,000 bus wheat
In 1840, 639,633 " do. 883,000 " do.

Inspected at Philadelphia in
1838, 291,000 bbls. flour,
1839, 416.000 " do.
1840, 617.000 " do.
At Baltimore, 1838, 430,000 " do.
1839, 560.000 " do.
1840, 780,000 " do.

There arrived by the Ohio canal, at Cleveland, on Lake Erie, in 1839, 1,520,000 bus. wheat, and 266.000 bbls. flour,
In 1840, 2,151.000 bus. wheat, and 505,000 bbls. flour.

Corn sells at 45 to 50 cents per bushel. Pork, $6½ to 7 per hundred weight. Exchange on England, 8 to 9 per cent premium.

January 27th, 1841.

CONTENTS OF THE FARMERS' REGISTER, NO. I. VOL. IX.

ORIGINAL COMMUNICATIONS.

Page

Union of the Carolina Planter with the Farmers' Register 1
Experiments with bone manure 1
Natural history of the tockawhoughe . . . 3
A successful experiment in rearing silk-worms . 8
The supposed transmutation of wheat to cheat . 11
Continuation of answers to general queries on marling, in regard to green-sand marl used on the Pamunkey river lands:
V. Answers of Edmund F. Wickham in regard to the use of marl, on his South Wales farm, Hanover county . . . 20
On the soils, and marling improvements of King William county. Introductory to answers to the general queries on marling . . . 21
I. Answers of Richard Hill, in regard to the Rumford Academy farm . . . 24
II. Answers by William S. Fontaine, in regard to Fontainbleau farm, in King William county 26
III. Answers by Thomas Robinson, in regard to Mount Pisgah farm, on Mattapony river 27
IV. Answers of Thomas Carter, in regard to Pampatike farm, ... 27
Liming on the Pennsylvania barrens 28
Thrashing machines 32
Answers to inquiries respecting the manuring, and rotation of crops, of Westover . . 35
Crushed-cor nmeal. Wintering hogs, &c. . 36
Convention of cotton planters in Alabama . 37
A common objection to agricultural periodicals, and especially considered in regard to the Farmers' Register 38
Sketches of western New York 40
First experiment in beet culture. Management of hogs 47
Domestic animals—their diseases and food . 49
The farmer's wealth 51
Remarks on greensward, orchard grass, and other grasses 54
Inquiries and remarks on salt, as a manure, and especially for cotton 55
The farms and farming of the rich Lexington district in Kentucky 56
Agricultural societies 57
Inoculating 57
Root feeding 58
Comparative value of the cocoons of the "two crop white" silk-worms, and other varieties . 58
Kentucky blue grass supposed not to be the same with greensward. Grasses improved by calcareous soil. Mellilot , ... 58
Inquiries and remarks upon the calcareous rock and soils of South Alabama 59
Manner of deposit of Hessian fly eggs . . 62
Monthly commercial report 63

SELECTIONS.

Description of the African potato 2
Cultivation of the vine in the west . . . 3
A curious fact 3
Profit of peas amongst corn 4
The curculio and fruit worms 4
Report of Major Gwynn on the drainage of the swamp lands of N. C. - 5
An improvement in fattening hogs 7
Chrysanthemums 8
Prognostication of cold weather from birds . 9
Laying down open lands in grass—Kentucky rotation—stock fodder, manuring and grazing—curing clover hay 10
Rhubarb plant 13
The Mammoth Cave of Kentucky 14
Large hogs 16
America against England in cotton manufacturing 17
Value of the olive 28
Pumpkin sugar 28
Seasonable hints 29
Extracts from the address of James M. Garnett, to the Agricultural Society of Fredericksburg, Va., November 13th, 1840 29
Propagations of the rose 33
Convention of tobacco planters 33
The European duties on tobacco. Opinions on the other side of the question 35
Reporting experiments with artificial manures . 43
Hay seed among corn 43
Beets for cattle 44
Cabbage as food for hogs 44
English mines and mining 45
Two good farmers 45
Hogs—mode of feeding 46
Manures and their application 48
Calves running with cows 49
A comparison of the different breeds of sheep . 49
Sowing grass seed thick and even, not thin and irregular, is the true interest 52
Damp stables 53
Remarks on the supposed discovery of the Hessian fly 60
Manure for cotton 63
Age of trees 62

Erratum.—In heading of article, page 35, for "Worcester," read "Westover."